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## How a Bee Man May Count in a Community

By Frank R. Arnold.

THERE is a town in northern Utah that is known from Los Angeles to Boston because of a bee man, M. A. Gill. Mr. Gill says that marketing is the least of his problems. His big question is getting honey to sell. His case is just the opposite of the farmer who maintains that anyone can raise crops, but that it takes a keen business man to sell them. He has fifty years of reliable dealing to his credit, and so the wholesale honey buyers in Kansas City, Cincinnati, Cleveland, and Chicago write to him every year for a standard article they are sure will come up to specifications. They know that his first-class comb honey will more often weigh 15 ounces net instead of the regulation 12 ounces. They know that his extracted honey is more likely to weigh 13 pounds than the regulation 12, and they also know that his comb honey will be packed in clean cartons, with boxes clear of all stain and with the net weight stamped on each section. The last is easy for him to do, as fifty years of handling comb honey have trained his muscles to tell instinctively without scales whether a comb weighs more or less than 12 ounces, and if there is any possible doubt the scales always settle it.

Mr. Gill's sales the past year are probably among the easiest on record. His first carload of comb honey went to Charleston, West Virginia, and included 10,000 pounds in cartons. A carload of extracted honey went to Los Angeles and the rest of this year's product was sold locally in the state. Stores in Salt Lake and Ogden took much, while many farmers in Idaho and Wyoming drove down to Utah this fall to get their winter's supply of honey from Mr. Gill. Many of them stopped on their way back from the conference of the Mormon church, which is held in Salt Lake City the first week in October, at the same time as the

State Fair, for the Mormons are a thrifty people and love to combine religion, pleasure and business, and are fast getting the winter honey habit, though they prefer extracted to comb. One of the orders that came to Mr. Gill was from the Students' Honey Company in Berkeley, California. That was for a carload of comb honey for students to sell at retail and thus get money to help pay for their education. A case of twenty-four sections of comb honey was taken to Boston by an enthusiastic college professor who had been teaching at the National Summer School of the Utah Agricultural College in Logan, a few miles from Mr. Gill's headquarters, and who realized that never before had honey so clear, so heavy, so completely the essence of the alfalfa-and-sweet-clover West, been seen in New England.

Mr. Gill could have sold ten times the amount he produced, judging by his orders. No wonder he is able every year to pack his bees for winter and leave with his wife to spend four or five months in California. The season this year in northern Utah was very short, lasting only from June 20 to August 8. Then cold rains came and stopped the nectar flow and left him with much unfinished comb honey on his hands. His spring count of 480 colonies, which during the season were increased to 710, were scattered about the valley in four apiaries. However, although the season was so short, the honeyflow, while it lasted, was good, and by forcing, Mr. Gill was able to report that his best colony made ten super's of comb honey, while his extracted honey averaged 184 pounds to the colony, spring count. The honey this year was a shade darker than usual, and therefore not so desirable. Its weight was due to the rare and dry air of the high altitude of northern Utah, as nectar is always thicker when gath-

ered at 5,000 feet above the level of the sea.

Mr. Gill's business plant is as concentrated as a Frenchman's shop, which usually opens into the kitchen so that the housewife may tend the shop as well as the pots and kettles. Coming to Utah from Colorado in search of extensive and exclusive bee pasturage, about 15 years ago, Mr. Gill got hold of a log cabin converted by clapboards into the warmest and coolest of houses. Back of the house, in the orchard, is his main apiary, on one side of which is his packing house and extracting plant, only a step from the house. Off to the west are fields of alfalfa, with canals lined with sweet clover, and miles of railroad deep cut, also lined thick with the same plant, while all around in the country you can hire locations of desert land at \$10 a location. A most unique feature of Mr. Gill's place is a windbreak of box elder trees thirty feet high, which cuts him off from the town at the east and makes a swarm of workers fly high when they start out and thus never trouble the neighbors whose barns and corrals are full of cattle. Mr. Gill knows that bees have to be humored and directed fully as much as human beings.

"They feel I am a part of nature," says he, "because in fifty years' handling I have learned to meet their requirements. I have a bee veil, but I don't need it very much. All the same I know I must work alone, if I am going to work without it. This talk that you find in Gene Stratton Porter's 'Keeper of the Bees' about bee immunity is mostly bunk. I can walk in the midst of an apiary with perfect immunity from stings when the bees are good natured—that is, when the day is sunny and the workers are all out in the fields. But on a rainy or dark day, when they are all at home, they are just like a big family of children shut up in the

house. They can't all be good natured. Some of them have got to sting you, even if you are their best friend. Then is the time to be careful and wear your veil."

Coming to Utah with a high business reputation from Colorado and giving the name of his town a honied reputation all over the United States, it is no wonder that Mr. Gill early took an interest in his town and that his fellow citizens made him mayor, although he was not a member of the dominant church. He was born in Wisconsin, of New England descent, both of which facts make for an intelligent interest in public affairs. As a result of his mayorship he has the best story of church domination ever told by a bee man. While he was mayor he was encouraged by the leading banker of the place to start a Chamber of Commerce, for the town was already locally famous for wheat, fruit, and dairy products. It was also a hotbed of typhoid fever every fall and in vain did the Chamber of Commerce try to exterminate the disease by getting the citizens to vote bonds for a water system. They were mostly thrifty, God-fearing Danes, given to coffee drinking, and so had no need, they said of drinking water from the mountains. Finally the banker, like all good churchmen, called in the help of the church. One Sunday an apostle of the church was invited by him to address the people. His address ran something in this wise:

"Brothers and sisters, I love your town. I should like to visit you often, but I am afraid to drink your water. I have to bring bottles of water with me every time I come, and many are the times I am taken for a bootlegger. Now I want you to vote bonds and pipe a pure mountain spring down to your town. I want you to have parks and gardens and take baths."

The apostolic seed fell on receptive soil and the bonds were voted the following Tuesday and typhoid fever has disappeared from the community.

"It was no work of mine," says Mr. Gill, "but if that be church domination, give me more of it."

An unequalled producer of honey, a man who has only to pick his markets to sell to the best advantage, a community worker with the best Eastern and Western traditions, Mr. Gill, after fifty years of honey production, is still going strong. His old age is one that any bee man might envy.

"My wife and I," he often says, "keep thinking we'll do a little less work ever year, but each year we do a little more. Perhaps that is the reason we keep going."

## Southwestern Honey Sources---No. 2

### The Century Plant or Mescal

By Frank C. Pellett.

THE agaves, commonly called century plants, are a very useful group. There are at least five species native to the United States, with some additional ones southward in Mexico. The name "Mescal" is very generally applied to these plants in many southwestern localities. An intoxicating drink made from the juice is also called by the same name.

An acquaintance with the plants common to the dry regions reveals a remarkable variety of adaptations to hard conditions. Woody plants either root very deeply or spread their root systems over a very wide area in

time it puts forth its abundance of blossoms, gives rise to the well-known name "Century Plant." The time varies from seven to upwards of twenty years with different species, and depending somewhat upon environmental conditions. When grown in the north in greenhouses, the time is much longer. The plant usually dies following its bloom, but sometimes leaves behind a group of suckers.

Although a single plant blooms but once, there are areas in the deserts of Arizona and California where they are sufficiently common to be of considerable importance to the beekeeper. When the plant does bloom it is an amazing sight to one who has not seen it before. The flower stalk resembles a telegraph pole in size, and stalks 20 or more feet in height are not uncommon. As will be seen by the picture, flower stalks look like trees, and the number of flowers is immense. Nectar is so abundant that it is impossible to estimate the quantity available from a single plant.

Although beekeepers report good crops of surplus from this source, the honey is said to be dark and strong, and salable only at a low price. Bees are reported as being uncommonly cross when working on mescal. The honey requires a long ripening period on the hives before extracting, and the quality is very poor at best. The largest average per colony reported to the writer was 90 pounds, in Old Mexico.



Flower stalks of century plants in Southern California.

search of the limited amount of available moisture. The succulent plants in addition to vigorous root systems make provision for the storage of water. The century plants develop thick and leathery outer surfaces to resist transpiration, and thick, pulpy leaves which hold a surprising amount of moisture. When there is rain the plant stores up water in the leaves in anticipation of the long periods of drouth.

The natives of the southwest provide a large number of products from the century plants. A sort of wine called pulque is made from the fermented flower stems, while stronger drinks, such as tekela and mescal, are distilled from the leaves. The bulbs or crowns are roasted for food and the fibre secured from the leaves provides for ropes, shawls and other garments. The leaves are sometimes dried by the Indians and smoked in place of tobacco. Food, drink and clothing, as well as implements, all come from the one source.

The long period required for the plant to reach maturity, at which

### Sweet Clover Seed

Sweet clover seed production for the United States will exceed that of last year by 25 per cent, according to a report from the state and federal statistician at Lincoln, A. E. Anderson. The increase has been brought about by larger acreage and increased yield per acre.

Sweet clover during the past few years has increased rapidly in importance as a hay crop, and it is interesting to note that seed production has kept pace with the demand. In Nebraska, production of sweet clover seed is expected to exceed that of last year because of increased acreage and yield per acre.

Prevailing prices in North Dakota, South Dakota, and Minnesota on September 15, were \$5 to \$6 per 100 pounds. The Nebraska price is expected to compare with that of Kansas, where the prevailing price is \$6 to \$7, with some offers of \$8 to \$10 per 100 pounds.



# A New Species of Honey Bee

By Tarlton Rayment

Author of "Bees in Australasia," "Profitable Honey Plants," Etc.

LIKE many other writers on the insects of Australia, I had always thought that the genus *Apis*, the hive or honeybee, was not represented in the commonwealth by a single indigenous species. However, I am now in a position to state definitely that the genus is native to Australia, for I am acquainted with one species that up to present has never been described by any entomologist.

About 1916 I had often been told by old settlers, who were also experienced bushmen, that during the early days they occasionally saw tiny nests of some "wild bee," and they described three small combs, built under any shelter and of about a man's hand in size. They were pendant, they said, but when I pressed for details they either described what I concluded was a swarm of the introduced *Apis mellifera*, the common hive bee, or else were so vague that I could only believe they were confused by the native social bee, *Trigona*.

However, during the war my friend, Mr. E. Garratt, son of the pioneer of commercial bee farming in Australia, invited me to go for a trip into the country immediately behind his home, which is in the foothills of the Australian Alps. During the afternoon he invited me to visit an old man's bush hut, and there he drew my attention to a swarm of miniature bees. I recognized them at once as an unrecorded species of *Apis*, for in every respect, except stature, they are replicas of the hive bee.

The three waxen combs are about the size of a man's open hand, the largest being the center one; the cells are of true hexagonal form, measuring nine to the inch. The combs were not white, nor yet were they dark, but were a dull yellow of about one season in age.

The bees are black in color, and with much hair; they are as small as flies, but more slender in the body. Though we had neither smoker nor veils, the insects made no attempt to fly at us to either attack or defend. They remained quiet on the combs, which were suspended from a rafter of the verandah roof. As that structure was not a very lofty one, the nest was no higher than the level of our faces. The miniature cells were slightly larger than those of *Apis florea*, the dwarf bee of India, and considerably smaller than those of *Apis indica* and *Apis mellifera*.

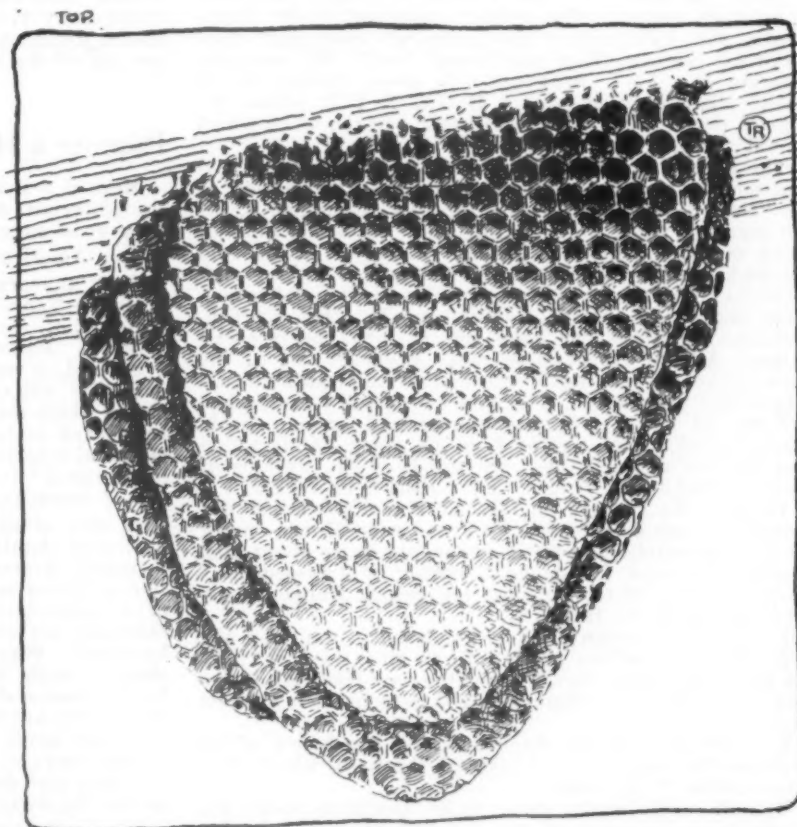
In the accompanying drawing I have given a view of the complete nest. Until a better name is found, I have given this new species of honeybee the title of *Apis enigmaticus*. I have chosen this as the tentative name because it has always been assumed that Australia possessed no native *Apis*, and the little information I could glean only served to still further confound me. I have seen a worker bee on the tea tree blossom (*Leptospermum*).

But Mr. Garrett, whose home is in the Bow-Worrung forest, assures me that in the early days this native *Apis* was not at all a rare bee, and I believe that there are still a few colonies in the mountains of Gippsland. This particular colony was found on the right bank of the Freestone Creek, about eight miles from Briagolong, Gippsland, Victoria, on a selection known as "Buckleys."

Later on, I found a bushman, a sleeper cutter, who knew of another little colony settled about five miles further back, in precipitous country, and I contracted with him to have it brought down. But one evening he called to tell me that he had cut

off the small tree limb to which the combs were attached and placed it in a tight box for transport. But the descent was so rough that the piece of limb rolled about—he did not take the precaution to secure it firmly before starting,—with the result that all the bees and comb were pulped.

In South Australia, in January, 1925, I was delighted to hear a very observant oil distiller describe one of these tiny nests, and only a few days ago I had a letter from a Gippsland beekeeper telling me about a tiny swarm—about a cupful, he said—clustered on a young wattle (*Acacia decurrens*) tree. The bees were black, and had started the foundation of their small-celled comb. Those that I observed were just as I have painted them, and from the reports of other observers, three is the usual number. It must be remembered that *Apis florea* makes but a single comb, and at first I thought I had discovered an indigenous variety of that species, the comb of which contains one hundred cells to the square inch, but it is only a half inch in width. Those of *Apis enigmaticus* are eighty-one to the square inch, the combs being a little over half an inch wide. At first I used to refer to them as *Apis trigona*; later on, I shall give the scientific description of the insect, but in the meantime I shall refer to it as *Apis enigmaticus*.



Comb of Australian wild bee with cells somewhat enlarged. They run nine to the inch.



Established by Samuel Wagner in 1861.

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### Huber's Work On Bees

In the editorials of June, 1925, we made mention of the fact that the editor had been asked to translate into English the latest edition of the work of the Great Huber, "New Observations on the Honeybee." This request came from two leading men in beekeeping, Dr. E. F. Phillips and Mr. E. R. Root. The Huber book, originally published in the French language, in Switzerland, in 1792, then again in 1814, had the honor of four English editions, the last two of which were published in 1821 and 1841. But none of them is correct or complete. Although two of them, at least, claimed to be original, similar errors were made in all. One error, which indicates that the translations were, to a certain extent, copies of each other, is the use of the words "strange hive" for "strong hive" in at least three editions, a typographical error, unnoticed by the so-called translators.

In addition, the English editions contain only 5 plates of engravings, instead of the 12 in the original work.

As to the value of Huber's work, it is only necessary to refer the reader to the opinion expressed by Mr. Langstroth, who called him "the prince of apiarians," page 34 of his original "Hive and Honey Bee." We may also mention the A. I. Root people's great Cyclopedia of Beekeeping, entitled the A B C & X Y Z, which devotes 3 pages to an eulogy of Huber and the work which he did for beekeeping.

The upshot of all of this is that the editor spent several months making a close and complete translation of the "New Observations." We hesitated to publish it, for the mention made of it in our June editorials did not bring many encouraging letters. However, as we did not wish to have had all this work done for nothing and, as we had several very urgent requests for its publication, from beekeepers in this country and in other English-speaking countries, we have put it into the printer's hands. All we expect is to make expenses out of the book. The original work was in two volumes and contained over 800 pages. Every part of it will be published and the 12 plates will also appear, all in one book, neatly bound, at the cost of \$3.00 per copy. Only a limited number of copies will be issued, as the work is of more interest to the student than to the field worker.

To give the readers an idea of Huber's original discoveries it may be interesting to read what Huish, one of his contemporaries and bitter opponents wrote about him. Huish considered Huber as a writer of "absurdities." Here are three of the "absurdities" which Huber discovered, as quoted by Huish:

1. That the queen bee is fecundated in the open air.
2. That the pollen, which until his time was known by the name of "crude wax," is not the raw material of the wax, but is the nourishment of the bees in their earliest stage.
3. That it is the saccharine part of the honey which produces the wax in the bodies of the bees, which they even extract from sugar.

Huber's experiments upon those questions were exceedingly numerous and are detailed at length in his book.

### Manitoba Crops

The New Year always brings us a number of letters from friends and the only regret I have is that they usually come so near to the New Year that I am unable to let our readers enjoy some of the good things they contain, in the first number of the year.

This year I received a very interesting letter from Father Francis, of the Trappist Monastery of Notre-Dame-des-Prairies, at St. Norbert, Manitoba. Our readers will recall that we published his portrait in our February number, just a year ago. He writes, following the usual holiday compliments:

"Although our honey crop did not begin until July 25, it amounted to nearly 200 pounds per colony. Father Trudel, of Otterburne, harvested about 250 pounds per colony.

"During the past summer we had the visit of your kind partner, Mr. Frank Pellett, with his son and a young friend. We wish you and him all the good possible."

We have had entire failures of honey crop, here in Illinois; some six or seven seasons, in our experience, were so poor that the bees starved in the middle of the summer. I vividly recall the time when a colony left its hive and clustered on a limb, the bees so starving that they dropped from the cluster to the ground. It would appear that such mishap cannot take place in Manitoba, for we never hear of anything less than 100 pounds per colony. That is the true country for bees, even if the winter lasts eight months and most of their time is spent away from daylight. Their long days of sixteen hours, during the summer, give them opportunities that are out of the question in our warmer climate.

### Painting a Honey Tank

Here is a short letter which is worthy of appearing in the editorials, as it gives the editor, in a neat way, some very good suggestions:

Editor American Bee Journal:

As it appears to the writer, the "Query as to Painting a Honey Tank," answered by the editor in the January issue, is of more importance than seems to have been given it. Paint (sometimes named "Enamel") of whatever kind, is made up of some of the following ingredients, viz: oil, turpentine (real or synthetic), various pigments which may be mineral or metallic, various gums or resins and certain chemicals, all of which are subject to chemical reactions and are more or less soluble. No paint or "enamel" is strictly insoluble. Honey also is capable of chemical combinations under various conditions.

In view of all these facts it should be very evident that no honey should be placed in contact with any paint or "enamel" if complete safety is to be assured. The question of flavor may well be considered, too. The surface of a honey tank, wood or metal, can be safely and effectively coated and fully protected with just—plain beeswax! Why go to the paint store or take any chances while the beekeeper has such a simple and effective material right at hand? And not only that, but if properly applied it stays for good and all. For a metal container apply heat to the metal so as to melt the wax on the surface. For a wooden container, which should be clean and dry, use a blow torch or a hot flatiron to spread the wax. A blow torch is effective in either case.

Wax and honey agree under all conditions. So, why not?  
D. QUEEN, New Jersey.



## Langstroth Memorial

The Memorial to the name of Mr. Langstroth, announced on page 534 of our November number, is getting impetus, as several beekeepers' associations are becoming interested. The Eastern Massachusetts Society of Beekeepers is announcing additional contributions to this fund and is asking its members to help. Their program contains the following mention:

Everyone who keeps bees and everyone who eats honey should know how much we are indebted to the genius of the man who made the practical hive now used almost universally.

L. L. Langstroth was the first to solve the great problem of how to construct a hive having frames with bee space about them. To have also a removable cover making it easy for the beekeeper to take out each frame without injury to the bees and so have almost absolute control and knowledge of the colony. Such an invention has made possible the enormous benefits beekeeping has been and is to this and other countries. It is proposed to honor this man and we ask you to contribute something to this excellent purpose. An Alcove Memorial will be in Cornell University whose growing library relating to Agriculture is at the service of every member of any Association of Beekeepers.

The following members have contributed the sum of \$16.00: President Geo. A. Phillips, \$5.00; Mr. B. P. Sand, \$5.00; Thomas Brown, \$1.00; Charles B. Whitney, \$1.00; F. W. Morton, \$1.00; J. W. Schirmer, \$1.00; John Albee, \$1.00; A. E. Wilson, \$1.00.

We feel that our society should cheerfully enter into the spirit of this tribute to a great inventor by a share in its endorsement. Send just what you feel you can afford to the Secretary, and in so doing honor a notable giver of the best in beekeeping.

No one is more interested than we are in the fame of Mr. Langstroth and we hope that our subscribers will help in the measure of their ability. We will add \$50 to the amounts already subscribed, as the American Bee Journal's share in this enterprise.

## Thomas Wm. Cowan

Each winter, for the holidays, I receive a pleasant letter from Mr. Cowan. Our readers probably know that Mr. Cowan was, for many years, editor of the British Bee Journal, that he is the author of three noted books: "The Honey Bee," "The British Beekeeper's Guide Book" and "Waxcraft," all of which have had numerous editions and translations and that he used to spend a part of his time in the United States. We had the pleasure of his visit at our home in the Eighties, and I met him twice in Switzerland at the home of our mutual friend, Mr. Bertrand, who was the editor of the "Revue Internationale d'Apiculture."

Each winter Mr. Cowan has been ahead of me in sending New Year's greetings. This winter I thought I would outstrip him, by writing him on the 10th of December. I was just one day ahead, for his letter to me was dated December 11. He says, in part:

"I thought that I would let you and Mrs. Dadant know that at 86 I am still able to enjoy reading the American Bee Journal, which I receive very regularly and so keep in touch with what is going on in your country. However, I am not able to do very much as I have been laid up with what the doctor calls influenza, but I think the doctors give this name to any illness they know very little about."

Those of our readers who know of Mr. Cowan will wish him, with us, at least as long and enjoyable a life as was the lot of our Dr. Miller.

## Buletinul Apicultorilor

Anyone who can read English or French readily understands the above title, which is the name of a bee magazine published in Roumania. We see that they have had a congress of beekeepers, and, although we are too ignorant to understand fully the Roumanian language, we see that they have had a good congress, for they publish a very pretty photo of the crowd present and a picture of the building. We pride ourselves on our great civilization, yet I will vouch that there are more people able to understand English in either Roumania or Russia than there are in the U. S. capable of translating either of those languages into English.

We exchange with some fifty bee magazines from foreign countries, but cannot understand the languages of more than half of them, and yet we think we are pretty well informed.

## Fruit Fertilization

Regarding the distance of colonies of bees from fruit trees, for the purpose of fertilization of the blossoms, it appears that the close proximity of the hives to the trees is of very great importance, because, at the time of blooming, the weather may be unfavorable and there may be but few hours in which the bees can work with activity and especially transport pollen from the best pollen-producing trees to the pollen-barren trees.

At the Farmers' Institute of Moultrie County, Illinois, where the great orchard man, H. M. Dunlap, and myself spoke, in the afternoon of January 14, Mr. Dunlap recited how some Ben Davis apple trees were helped in pollination by the presence of Jonathan trees. He had planted Jonathan trees, every ninth row, in his Ben Davis orchard. The bearing of fruit by the Ben Davis trees, during one season, was so significant that he wrote to the Department at Washington to mention it. They sent an expert, at the time of the harvest of the crop, to weigh the apples from the different rows. It was ascertained that, taking the trees nearest to the Jonathan rows as bearing a full crop, the next row away bore three-fourths of a crop, the next farther about half a crop, and the next about a third of a crop, showing that the nearer the pollen-barren trees were to the pollen-bearers, the larger the pollinization was. This was ascribed by him to the greater ease the bees had to go from the one to the others, as in many cases the weather was unfavorable and the visits of insects were limited. This is why Mr. McClay, at the Hillview, Illinois, orchards, succeeded best where he had bees in close proximity to the hives.

## Not All Dead Brood Foulbrood

Regarding the article on page 568, in which a Missouri beekeeper asserts that the fight of foulbrood is all a mistake and that *Bacillus larvæ* is a theory, we receive a very indignant letter from Mr. T. C. Johnson, of Logansport, Indiana, who wants all men who have any doubts about the existence of real foulbrood to take a trip with their State Inspector so as to "learn a few things." This was not the first time that we heard it stated that some men doubt the existence of foulbrood. All they need is a little more experience. Foulbrood is not a new thing, but too many people are apt to doubt its existence, just because they have never had any experience with it.

## The French Queen-Rearing Book

The publisher of Perret-Maisonneuve's book, "Apiculture Intensive & Elevage des Reines" announces the publication, in March, of a third edition of the work, with an increase in the price to francs 27.50. This is simply due to the falling value of the franc, and makes it less than \$1.50 in our money, including postage to this country. Perret-Maisonneuve is one of the progressive beekeepers of Europe. His influence is very much felt in France, where progressive beekeeping has had many opponents. We can take orders for the work from readers of the French language, if desired.

## The Report of the Seventh International Congress

The report of the Quebec meeting of 1924 is on our table. It is a large book containing 500 pages, for it has the reports of both the French and the English meetings, the French section a little the longer of the two. We have not yet read it through, but it appears very complete, printed on fine paper, with a number of engravings, bound in stiff paper covers. It will be useful to any apiarist who likes to read of international and national questions. The price is \$2.25. We can take orders for it.

# Pollen Collecting by the Honeybee

By Bruce Lineburg.

TWO difficulties confront the observer when he attempts to ascertain what a bee does and how it does it. The first of these difficulties is due to the relatively small size of a bee, and the second is due to the extraordinary speed at which a bee may perform many of its activities. The beating of the wings of the bee has been calculated at 440 per second; and as is well known, such movements are too rapid to follow with the eye. Many of the movements of the bee in pollen collecting, while much slower than the movements of the wings, are yet too rapid to permit clear study under ordinary conditions. As a result, the descriptions of this activity were largely a matter of conjecture until F. W. L. Sladen (1) and D. B. Casteele (2) published the results of their study. These investigators, working independently, arrived at very similar conclusions; both saw clearly the function of the so-called "wax shears" in the loading of pollen, but they express a diversity of opinion as to how cohesion between the pollen grains is obtained in order that they may be loaded and carried in such relatively large masses. Because of this diversity of opinion, further study is necessary.

Observations may be made on pollen collecting by studying bees while working on ragweeds (*Ambrosia tri-*

*fida* or *A. artemisiifolia*), corn (Maize), or privet (*Ligustrum vulgare*). Each of these plants offers practically unobstructed view of the bee while it is working on the flower; they also produce flowers on a level with the eyes of the observer when he is standing. None of these, however, equal the alder (*Alnus alnobetula*) or the hazelnut (*Corylus americana*) for study in pollen collecting, for in addition to the advantages already mentioned, these plants produce their flowers in early spring, when days are cool. Frequently it happens that bees may be found working on them when it is so cold that the bees are chilled so that their movements are slow enough to be readily followed. Many times the bees are so stiff with the cold that they are unable to fly back to the hive after the load of pollen has been collected.

In both the alder and the hazelnut the pollen is "dry," and this factor also slows down the work of the bee. In both of them pollen is produced in a catkin, and the slightest jar to the catkin releases the ripe pollen, which floats away on the wind. No rough-shod methods may be used here, or the bee goes away empty-handed. The work must be done with ease and delicacy, and haste is never conducive to delicacy.

Whether the bee learns by experience that these flowers require different treatment from those which bear "moist" pollen, may be debated; but the fact remains that their behavior varies according to the type of pollen being collected. When collecting moist pollen from a flower such as a dandelion, they hustle, they claw, they bite, they kick; at times they actually wallow in pollen. When collecting dry pollen from alder or hazelnut catkins, they alight gently near the lower end of the catkin, where such alighting produces least jar. They work quietly upward along the catkin, using the mouth parts to loosen the pollen, the body, with its mass of entangling hairs, being situated below the point of operations, where it may catch a maximum amount of the pollen which is accidentally dropped from the mouth parts. On these plants they work slowly and with a minimum of disturbance to the flower. Frequently one may see a bee hanging by one leg from the lower tip of a catkin, the other legs being employed in brushing the pollen from the mouth parts and ventral regions and transferring it to the pollen baskets (Fig. 1).



Fig. 1. Bee transferring pollen to its pollen basket.

The basket-loading process may be observed also on cool mornings at the apiary. The hand is held just in front of the entrance to the hive when bees are returning from the fields with pollen-covered bodies. The chilled and weary bees settle upon the hand, after which the hand may be lifted gently to within a foot or two of the eyes. On such occasions a bee sometimes remains for several minutes, perhaps enticed by the warmth of the hand. During this interval the bee may set about the removal of pollen from its head, thorax and legs, and also the transference of it to the pollen baskets, all of which may be observed with ease.

In order to understand the process of pollen collecting it is necessary to study the structure of the bee's legs and also the hairs which cover practically all parts of the bee's body. These hairs are variously modified and serve a variety of purposes. Any type of hair is useful in retaining pollen grains, but the long-branched hairs covering the upper parts of the legs, thorax and under side of the

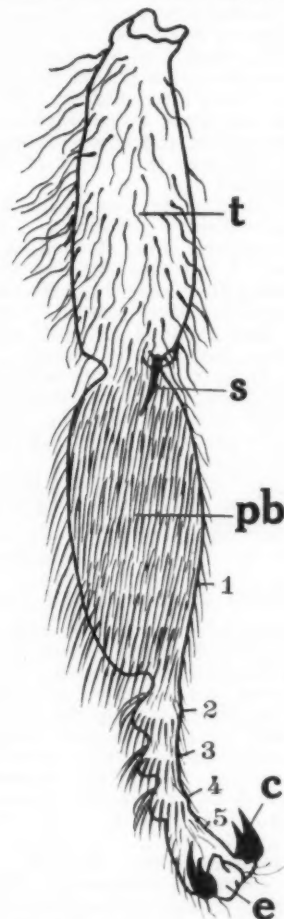


Fig. 2. Hairs used as combs.



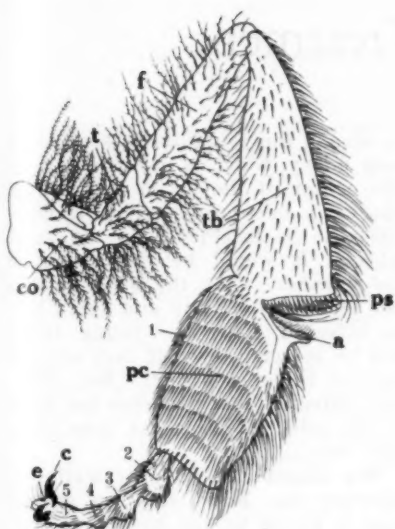


Fig. 3. The Pecten Spines.

head are particularly adapted to this purpose. Many hairs nearer the extremities of the legs are modified to form spines, and when found in considerable numbers may be used either as brushes or combs. Such brush-like structures are found on the inner surfaces of the plantae of the first and second pairs of legs (Fig. 2). The comb-like structures are found on the plantae of the first and third pairs, those on the first pair of legs being known as the "antennae cleaners," and those on the third pair being known as "pollen combs." A single row of heavy spines is situated on the lower and inner edge of the tibia of each hind leg. These are known as the "pecten spines" (Fig. 3).

The first operation in pollen collecting is the loosening of pollen from the flower. This is accomplished, as already stated, by biting, clawing, or merely brushing the body against the anthers of the flowers. When a considerable amount of pollen is attached to the various parts of the body it is brushed together and deposited upon the pollen combs of the third pair of legs. The first pair of legs remove pollen from the region of the head and from the mouth parts. The second pair of legs remove pollen from the first pair of legs and from the thorax—the pollen brushes of both pairs being chiefly concerned in such removal.

The pollen from the various parts of the body being collected upon the pollen brushes of the second pair of legs, these brushes are placed between the pollen combs of the third pair of legs, where they are cleaned by a combing motion of the hind legs (Fig. 1).

The pollen is next removed from each pollen comb by drawing it over the pecten spines of the opposite leg, thus depositing the pollen on the outer side of the pecten spines and

in a chamber-like structure between the tibia and the planta (Fig. 5). For this structure the name "pollen packer" is suggested, since "wax shears," the name formerly applied to it, is meaningless. After the chamber has received a portion of pollen the leg is flexed backward, bringing the auricle up into the chamber, compressing the pollen and at the same time forcing it out and into the pollen basket. Additional pollen run through the packer forces that already in the basket farther and farther from the compression chamber. From time to time the pollen in the pollen basket is patted down by the pollen brush of the middle leg. Perhaps a little pollen is added in this way, but it is probable that in the long run as much pollen is removed by the brush as is added by it in the patting operation.

In conclusion it should be added that dry pollen must be moistened by the bee before it can be manipulated, hence the necessity of its removal by the mouth parts. Some secretion or honey is added before such pollen leaves the region of the mouth. On the other hand, numerous observations of pollen collectors convince the present writer that many moist or sticky pollens may be packed in the pollen baskets without the addition of liquids of any kind on the part of the bee.

### Bees in China

The Chinese have bees, but the hives consist of a box with a small hole in it. The confusion is apparent. When they see how honey can be procured without destroying the entire works, and with the swarm, they become overawed. The honey they obtain would not pass the pure food and drug act of America, as it contains larvae and other impurities. But when they see how it can

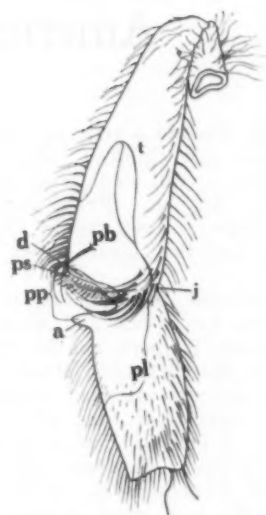


Fig. 4. Showing the pollen packer.

be done under the modern scientific methods they are very anxious to learn the method. This you will see is one way of making a contact. We can then give them information on bees and the Gospel at the same time. The parable of The Good Shepherd can be enacted before our eyes, substituting bees for sheep, when robber bees make an effort to get in through another way than the door. John 10:1.

I trust you will pardon these few notations. Thought that in case the readers of your magazine would be interested in getting a few ideas on bees from this corner of the globe, providing there have not been such articles in previous numbers, would try to jot down a few generalities. Being a novice, it is not my intention to contribute any new discoveries in the line of improvements, but merely make a few comparisons of the possibilities for successful beekeeping, when modern methods are employed, as contrasted with the native process.

E. M. Hegge.

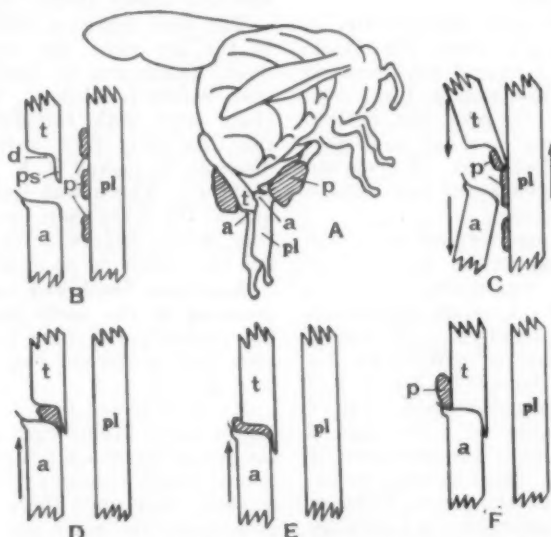


Fig. 5. Diagram showing how the bee loads her pollen baskets.

# American Foulbrood and Its Treatment

By Dr. G. A. Ootmar, British Columbia.

IN 1922, I made a trip to Canada to visit my children, who were living there. But one never knows what may happen. From paying a visit it came to settling in Canada and one day the local paper published:

"Dr. Ootmar, of Flanders, who is visiting his son-in-law and daughter, Mr. and Mrs. Kuipers, has decided to remain at the Okanagan Mission."

I had scarcely installed myself in my new home when, one afternoon, I received a letter. It was from an old friend from Flanders who had settled in Canada some years previously and had read in the local paper that I had come to British Columbia.

He came to visit me. One Sunday afternoon, sitting on the porch during that wonderful Indian summer, we heard the tooting of a horn and very soon a motor approached and my old Belgian friend jumped out. We shook hands for a quarter of an hour.

That evening he told me what had happened to him. During the war he had fought the German invaders, but after the war he was accused of having been friendly to them; so, as he had an uncle living in Canada, he crossed the sea with his family to settle on his uncle's farm. It was a great change for him; he worked with hoe and mattock instead of with his pen. His uncle died, he sold the farm, retaining only the orchard and a modern house. He bought twenty hives of bees, too many for a beginner, and began beekeeping.

He was very fond of bees. He had brought with him a book which I had written about bees, and he had nearly every one of its 400 pages covered with pencil notes.

I promised to come and see him, in the spring. I did, about the middle of April. As I neared his home, on the trail from the landing, I sat down on an old log, to rest, and noticed that I was sitting on a bee tree. Bees were flying in and out. I promised myself to come back and take possession of those bees.

A good welcome awaited me. The sun was setting as we finished our supper, the air was fresh. We went to the apiary. I smelt something. My friend noticed it and asked, "What is the matter? What do you smell? Fresh honey?" No, it was a strong, disagreeable smell, that of foulbrood. Foulbrood! The loss of the bees, the loss of the prospects of tons of honey! The following morning we inspected the hives. Thirteen of them had foulbrood. An unlucky number.

He had worked faithfully with his bees the previous fall. He had fed them well, on honey that he had purchased, had put them in the cellar; but the honey was of unknown origin; he had not thought of the danger of feeding this to the bees, and it was certainly this which had infected his colonies.

We know that foulbrood is readily spread by infected honey; the germs live in it and may still be alive after a number of years. The infection of American foulbrood is similar to the infection of typhoid fever among men. Both may be acquired through infected food.

I spoke encouragingly to him. I was well acquainted with the disease, having secured some samples from Dr. Phillips during a trip to Washington, for the disease is, so far, unknown in the country of my birth. But I had failed to cultivate the germs.

I promised my friend to come back a little later to help him treat the bees. I did. As he had no tank, we used his bathtub, covered with blankets, as a disinfecting tank. We used full sheets of foundation to replace the combs that had to be destroyed. This was during fruit bloom. The snow of winter was still on the mountains, but the snow of fruit bloom was in the valley.

During the night that followed my arrival, I was awakened by a painful burning of my eyes. Something must be wrong with the formalin in the next room. I arose. There, in the bathroom, was a barrel of formalin leaking. I turned the barrel on end, wiped the splash; but I could no longer sleep in my room. I went to the porch with blankets and pillow and fell asleep there.

The next morning, when we went to the bee yard, the bees were already awake and we began our work even before breakfast. We placed a clean hive with foundation behind the first hive, then opened it. No disease! It looked O. K. How could that be? There was less disease in any of the hives than there had been four weeks before. We can establish the following as a rule:

**American foulbrood is most pronounced in the early spring.** This has probably led some people to the idea that foulbrood can cure of its own accord.

My explanation is this: When the queen starts laying eggs in January, the young larvæ are fed on the stored honey which contains the germs of disease. But when there is honey to gather outside, when the willow and afterwards the apple, the pear, are

in bloom, the young larvæ are fed on new honey, which is not infected. So the center of the brood nest, where the early bees are hatched, is more likely to be infected than the outer edges. It would be interesting to see whether, when the queen makes her second round trip and again lays in infected cells, the young larvæ will be infected, even if they are not fed on infected honey. But wherever infected honey touches the walls of the cells, infection can take place that way.

We talked this all over while inspecting the hives, and we agreed that it would be too bad to destroy so much healthy brood. So we put all the frames containing apparently healthy brood into separate hives, with some young bees to care for it, and took this out of the bee yard. In three weeks the brood would all be hatched and only a few drone cells left, as they require more than three weeks to develop. Of course, we had to be careful that no queen was put into those hives. At the end of three weeks those bees were shaken into new hives with full sheets of foundation and a young queen. The combs were to be treated just the same as we treated those containing diseased brood or honey.

The bees were now all in new hives on new frames with foundation. As they had no brood and it takes three days for eggs to hatch, they had ample time to use up their honey to build comb before any brood would be fed, and the brood was all nursed on fresh honey. It was a busy day. When evening came and supper was ready, my friend busied himself removing the stings from his arms, and we talked over our experiences of that day.

We had noticed that there is scarcely a drone larva affected with the disease. That is due to the fact that they are nearly always reared at a time when there is plenty of fresh honey in the hive. It is the same with queen cells. We seldom find disease in a queen cell.

However, in the queenless colonies, which reared queens after they were transferred, we found some diseased queen larvæ, because they had been reared out of the brood by enlarging the cells and not directly from eggs laid by the queens in new cells.

The next morning all was quiet in the bee yard. No robbing. So we went to work extracting the honey, before treating the combs. All day long the extractor sang its monotonous song. We had covered all the walls of the honey house with paper, for fear that some honey might be



spilt on them. This paper was afterwards burned.

About 11 o'clock we heard a peculiar noise in the apiary. The bees were swarming. There came one, then another, and still two more. "What is wrong?" said my friend. "It is our fault," said I, "we could easily have prevented it. If we had put into each hive a built dry comb, the bees would have had room to put the honey which they brought in and the queens would have had cells ready for their eggs. That might have prevented swarming."

We caught the swarms, caged the queens, and had no further trouble. As we were short of queen cages, we used a piece of queen excluder in front of some of the hives. This kept the queens in.

The next day we started disinfecting the combs. This would have been easy if we had had a tank with a valve at the bottom and a hose connected with the barrel. The formaldehyde may then be allowed to rise slowly in the tank and easily fills the cells. When the combs have been in long enough the barrel may be lowered and the solution runs back into it. When using a bathtub we had to do differently. Our apparatus was a crate large enough to contain six supers in two tiers, with four ropes hanging from the top and running over a pulley, carrying a pail of stones at the other end, the whole apparatus hanging over the tub. By removing some of the stones, the supers could be lowered slowly into the bath until they were completely immersed. As the cells filled with the solution the crate sank readily deeper and deeper.

To make a 10 per cent solution, we used eighteen pails of water and two of formalin. The upper frames in those supers would try to float, so we nailed a cross piece on top of them to keep the combs in place. Inside of an hour we would have the crate covered with the solution. We then had to wait two days to allow time for disinfection. We covered the bath with blankets to keep the solution from evaporating. It took more than a week before the last combs were disinfected.

Mr. D. H. Jones, professor of bacteriology at Guelph, says that after forty-eight hours, in a 10 per cent solution, all the bacilli and their spores are killed, even in the capped cells.

Meanwhile we boiled all the honey, that we had extracted, for at least half an hour. The spores are killed by the end of that time. This was fed to the bees later.

All this was a hard job. The air in the bathroom became more and more laden with formaldehyde gas, and the mucous membranes of our eyes and of our noses began to burn

through irritation. My friend had some sore places on his hands which became very painful from the formalin, so much so that I had to handle the frames myself. An afternoon in the open air was very welcome.

After disinfecting the combs, we washed them under a water tap, so that very soon there was no longer any smell of formalin.

The old brood chambers and bottom boards were disinfected in a similar way. The queens were released and a few disinfected combs were inserted in the middle of the new hives.

My friend took me back to the ferry, not without some trouble in passing through the mud, as it had rained considerably.

Two weeks later a letter from my friend informed me that all was O. K. The bees had made some honey and had plenty of healthy brood. The bathtub had been cleaned so that mother could use it.

The treatment of foulbrood is not an easy one. Much care has to be taken not to make any mistakes, not to infect again the disinfected combs by handling them with soiled hands

or placing them where other infected combs have been kept.

Now my friend writes that we must come and spend two weeks at his home, the whole family, married and single, not to work at disinfecting the bees or to extract honey, but to enjoy a visit and sing the old Flemish songs with the only descendants of Flanders that live up in the mountains which enclose our beautiful Okanagan Lake in British Columbia.

(We beg leave to offer one criticism concerning this most interesting article. It is in regard to putting a built comb into the transferred hives in order to keep the bees from swarming, for we believe that the bees might store some of the contaminated honey in their stomachs into this comb. Better keep the bees from swarming by caging the queen or using a queen excluding guard at the entrance till the swarming impulse is ended. Experts say that when the honey is boiled, the vessel that contains it should be closed so that the boiling honey may not splash out to the sides of the vessel, where it would perhaps escape the great heat.—Editor.)

## Sugar vs. Honey for Winter

By A. C. F. Bartz.

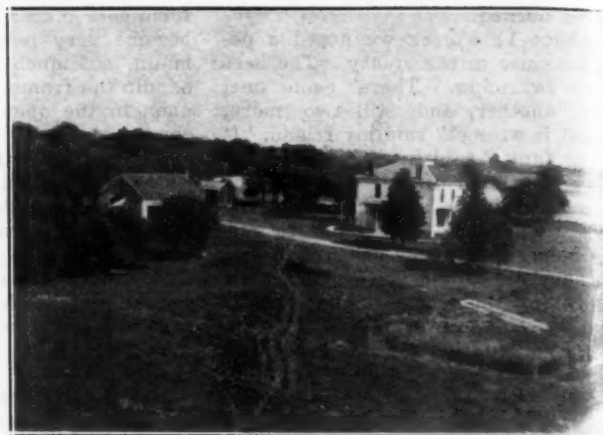
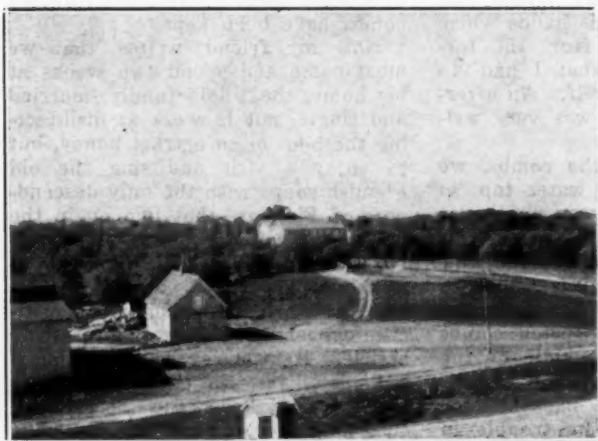
The advocates of sugar feeding for wintering bees, since they are patronizing the sugar industry ought to raise sugar beets instead of honey, whereby they would lessen the overproduction of honey and remove themselves from the humiliating position in which they are placing themselves before the public when advocating sugar as superior to honey as a food for bees. The public is beginning to take notice, and the writer has here and there met with the remark that "honey can't be as good a food as beekeepers try to make out it is, for even the bees themselves can't live on it in the winter time, and prefer sugar."

We are surely creating a deplorable condition for the honey producer who is in the game as an occupation for a lifetime, with this everlasting advocating and practicing sugar feeding for winter, as if the bees really could not winter on honey, when the fact is they winter better on good, ripe honey than on anything else we can give them. And here again the trouble is not with the bees and the honey; the trouble is with the beekeeper, who takes the first gathered white honey and puts it on the market and brags about its white color, trying to make the public believe white honey is better than dark, when the public does prefer a

darker grade of honey. And then, on the late, partially ripened honey he expects to winter his bees.

The writer has kept bees for nearly thirty-five years, and for twenty-five years on a commercial scale. And during this entire period of time he has had only a few bad winterings, but many winters has wintered 100 per cent, and always on honey, with the exception of a few experiments with the much-lauded sugar feeding. In the writer's opinion, there are only two excuses for using sugar for wintering bees, viz., no honey crop or honey of inferior quality, but never with a crop of pure, ripe honey gathered in the forepart of the season.

(Our correspondent is very certainly correct in asserting that white honey is usually better than dark for winter feed. The reason is that it contains less foreign substances, less gum, less pollen. Those foreign substances load the bee's intestine and make it difficult for her to remain several months in the hive without a flight. That is the why of sugar syrup as winter food. But it would be another delusion for the public to become convinced that sugar syrup was, for that reason, better for human food than honey. Let us save the best honey for winter, but let us also avoid keeping the bees over winter on dark, pollen-laden honey.—Editor.)



General view of the plant at Hillview.

## Wedding Bee and Blossoms in 1200 Acres of Apples

By G. H. Cale.

**T**HE title is significant of the story. Bees and apples have been linked together by necessity long enough for acceptance, but there has never been an attempt on a larger scale to demonstrate how much bees will do for the commercial apple grower than the one I am about to relate.

I have seen apple trees cover acres of ground, but never before have I seen them sweep from view as they do on the McClay estate at Hillview, Illinois. Here, as far as vision carries, the world is apple trees, and to see the sea of bloom in spring is a red letter event. The beauty of the delicate flowers can never be more gorgeous, as they spread about, far into the distance.

The town of Hillview is just half way between Kansas City and Chicago, on the Chicago and Alton railroad. The soil is especially well adapted to fruit growing, as it is a deep, wind-blown loess, still loose for many feet down and still fairly sweet where it has not been too badly washed. The land is quite hilly, not easily farmed, and the slopes allow enough air drainage so that trees are not often injured by low temperature. Because of these natural advantages there are a number of large orchards in the region.

One of the oldest of the large commercial orchards belongs to the McClay estate. The father of the present McClay boys came from Vermont, in 1869, and in time estab-

lished in Chicago a successful produce commission house. He bought apples in southern Illinois and married an apple grower's daughter, later buying the place at Hillview where, forty or fifty years ago he established the orchards which now bear his name.

The present orchards comprise the original plantings, still owned entirely by the estate, and a later block now owned by Albert McClay, who is the present manager of the entire place, in all about 1,200 acres, the largest acreage of apples in the world under one management in one place.

The orchards are in a commanding location, seeming to be on top of the world. From different vantage points one can look out over great distances, with avenues of trees extending in every direction. It does not look as though it would be hard to walk to any point among them and back, but it is not as easy as it looks. No novice will attempt it twice, as it takes a "barrel hound," as the old men well acquainted with the ground are called, to guide a newcomer around successfully.

The apples grown are mostly varieties which will keep well in storage, principally Willow Twigs, Black Twigs, Jonathans, Ben Davis, Missouri Pippins, Gano, some Maiden Blush and Grimes Golden and a few Winesaps.

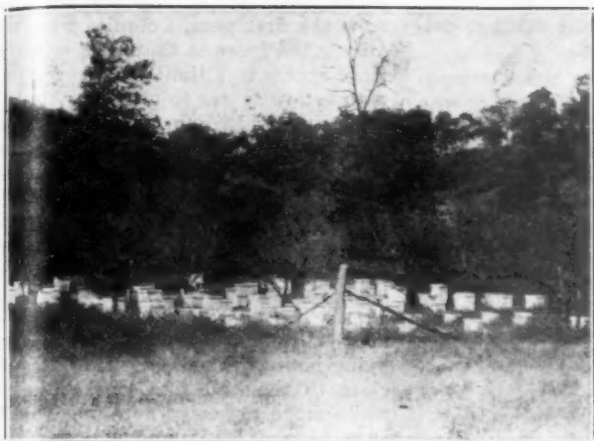
Albert McClay is a masterful man, used to heavy loads, and one who cannot be interested in small ventures. An establishment of the kind he manages is just to his liking and some idea of its immensity can be gained from the striking figures in the course of this story.

The amount of money invested in an enterprise of this sort is not ap-



The hives scattered through the orchard.





The bees are moved to permanent apiary sites after the blossoms fall.

parent to the casual observer, but when the facts are known they rather stagger the imagination. The permanent physical equipment, buildings, stock, trees, machines, spraying outfits, ladders, mixing tanks, pipe lines, trucks, and all the odds and ends needed for the work, are valued at a sum which would be a comfortable fortune for most of us. The cost of planting trees, bringing them to bearing, and keeping them in condition from year to year is well into six figures. As Mr. Rice, one of the orchard foremen, put it, "When we have to spend money in this orchard we just shut our eyes and spend."

Besides the residences of the manager and his mother, two large, substantial homes, there are about thirty-eight houses on the estate where the regular employees live with their families. These homes are owned by the estate and rented at a nominal figure. Scattered about among the different orchard blocks, they serve partly as a protection to the crop.

The big boarding house, which you see in the picture, will accommodate a good share of the crew during the picking season. The barns, barrel sheds, and packing house, added to those buildings already mentioned, would, if gathered together, make a fair-sized village.

Stretching through the orchards are fourteen miles of pipe lines, leading to the big mixing tanks, conveniently placed so the sprays may be mixed right among the trees. There are seventeen spray outfits, all of which are in use at some time during the spraying season.

International trucks haul materials back and forth from the orchards to the packing house and to the cars as they are loaded. The hilly nature of the land is such that cars cannot be used to advantage in the orchards themselves, so wagons are used for this purpose and mules are the most

satisfactory motive power. There are fifty or more mules on the place all the time.

About eighty-five men are employed constantly. It is their job to work the orchards, pruning, fertilizing, cultivating, and generally caring for the place. It is probable that the annual overhead of an orchard of this size, whether or not an apple is picked, will come somewhere between \$150,000 and \$200,000.

Things are comparatively quiet at Hillview until the picking season. But when the fruit is ripe, how things change! Apple men come in from all directions—bosses, pickers, sorters, facers, tailers—all good men from north, south, east and west—until 250 or 300 of them are there. For two or three months the picking of fruit will be their task. Some of these men have been coming to the McClay orchards for years. Although there is naturally quite a

fluctuation in the membership of the crew, most of them are veteran orchard men who know their work and know it well.

To watch a group of experienced apple pickers, perched about a tree, fills the novice with awe. Apples disappear like magic from limb to bag. Each picker has a number, and as he empties his bag on the sorting table, he calls his number, which the boss enters on a tally card. This keeps strict count.

When the men gather at the boarding house at night it is a unique sight. The cooks have supper ready and, at the call, the long lines of tables in the big dining room are filled with famished huskies. There is the best of food and plenty of it.

After the meal the boys gather for an evening of entertainment. There are games, music and impromptu amusements. They have the best of accommodations. The rooms are



The orchard at picking time.

separate like those of a hotel, with every comfort provided, even to shower baths.

This is a fair picture of the setting for the most outstanding practical experiment in the value of bees as pollinators that has yet been tried. McClay has given every attention possible to the trees, leaving nothing undone that might increase their vigor or their yield. Two years ago Mr. W. P. Flint, the Illinois Extension Entomologist, from Urbana, suggested to him that the light set of fruit he had been getting in certain blocks might be due to the lack of insect pollinators at the time the trees were in bloom. Flint suggested that bees might help.

The idea seemed logical to McClay, so he tramped the countryside, picking up colonies of bees, since that was to him the beginning and end of the problem. It was simply a job of buying bees in hives and setting them in the orchards. It soon became apparent, however, that to establish the bees was a man's sized job and that there was more to beekeeping than he had ever supposed.

The farther he went, the worse it got; in fact he soon admitted that it was entirely beyond him. But he was sold on the need for bees, as every worth-while experiment, that gave him published information, pointed out irresistibly that bees were a help in the commercial orchard, and, in the case of some fruits, were an absolute necessity. Since man has upset nature's balance in planting fruit in large blocks, he must estab-

lish it again by providing all the conditions needed for fruit setting, pollinators not excepted.

His next step was to hire a competent beekeeper, Mr. Kennedy, who came to him from Nebraska. Kennedy, a firm believer in clean bees, induced McClay to buy packages from the south, as he found that many of the hives McClay had so painstakingly gathered about the countryside had foulbrood.

Kennedy boomed right into the job, but many of the trees had been in bloom some time, when the last shipments of bees came, so they were

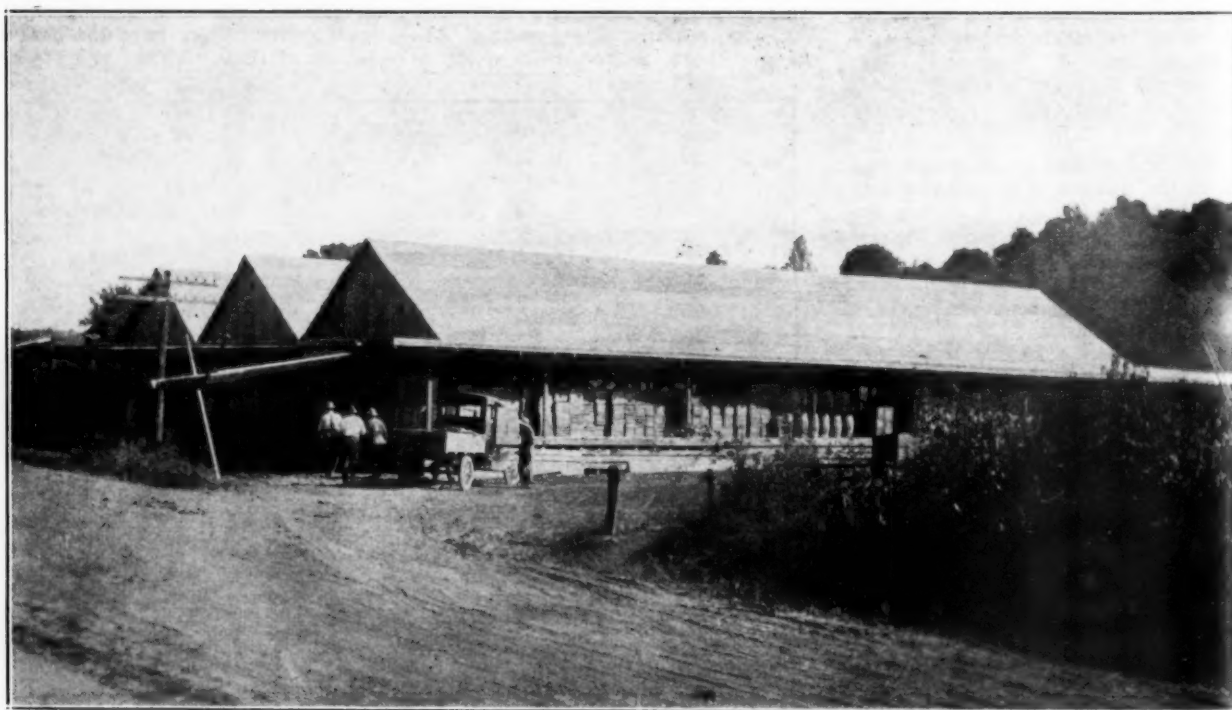
established rather late for best results the first year. Colonies were set among the trees so that each one had close access to a limited number. The plan followed was to have one hive at every twelfth tree in the row and the next lot six rows over, alternating the position of the hives so they were between those in the previous row. This management was a very important item, as important as any in the entire experiment, as it insured a maximum number of bees in a small area. The value of this became evident when the bees had only a few flying hours in the day. They stayed close to the hive and worked hard, while more extended foraging would have been difficult, and at times impossible.

It is not considered good practice in this orchard to spray with the bloom on, so no revision of schedule was needed on that score for the sake of the bees. When the bloom starts to drop, spraying begins, and since there are other varieties still in bloom, it was deemed best, to avoid all possibility of injury to the bees, to move them to the foot of the hills, some distance away, in reach of the river bottom land. This soil, as well as the loess on the hills, is quite sweet, making for a ready growth of clover, and large amounts of alsike are grown there.

With the alsike and the usual white clover and fall flowers, which are so common in the Illinois river bottoms, a good crop of honey would have ordinarily been assured. Theirs was the luck of the beginner (reversed),



S. J. Kennedy, the man who looks after the bees.



The apple packing plant.



as a late freeze in May caught all the clover and ruined the prospects from that source.

There is little in the orchard for the bees when the bloom is over, as practically no cultivation is carried on. McClay much prefers blue grass sod on these hills, as it insures better air drainage and better moisture conditions. With the bees out, the beekeeper can prepare them for a flow elsewhere. They are in the best of shape, coming from the apple bloom with an abundance of honey and pollen. After the season, the colonies are prepared for winter and in the spring moved back again to the orchards in time for the bloom.

The results the first season in the orchards cannot be taken conclusively in favor of the bees unless they are followed by similar results the next few years. But even so, they are striking and the older men, who have been in the orchard for years, admit that something has influenced the set of the fruit in a way they have never seen before, although not all of them are ready to admit that the bees are responsible for the difference.

From the early set, everyone was jubilant. The prospects were for 100,000 barrels of No. 1 apples, which would have been a phenomenal crop. A freeze on the 25th day of May destroyed many of the newly set fruits; later a hail storm left marks, and finally a series of hot, dry winds cooked many of the exposed apples so they rained down in heaps. Ten thousand barrels were estimated lost by this drop.

In spite of the reverses, however, the crop was remarkable. There were 65,000 barrels of No. 1 apples and 200 carloads of bulk apples. The previous best crop was 51,000 barrels, which gives an increase for 1925 of 14,000 barrels over the best crop. It was over twice the crop for 1924, while the yields in the two nearest commercial orchards were only about half what they were in 1924. If the bees are responsible for only a part of this increase they will surely be an investment in high finance.

The first bees were placed among the Ganos and Missouri Pippins. Since 1910 there had not been a paying crop of Ganos. The best crop in that interval was in 1923, when the yield was an average of 2½ barrels to the tree. This year the yield was 5½ barrels to the tree. The Pippins were loaded as never before.

The last bees were put in a small block of Winesaps. They are young trees and have set a noticeable amount of fruit but once before. Although the bloom had started to fall, the bees did some work, with the result that there was a scattering set of fruit all through the block, with

one or two trees quite well set. If full colonies had been there in early bloom, with a heavy set of fruit resulting, it would have been the most convincing evidence in the entire experiment.

## Alfalfa and the Bee

By Don B. Whelan.

**B**EEKEEPERS in the alfalfa regions will be gratified to learn that the best time for the farmer to cut his alfalfa is about full bloom. It has been the practice with most hay producers to cut their alfalfa at the beginning of the bloom, as the quality was deemed best then. There are, however, many other factors to be considered.

### Wisconsin Experiments

The Wisconsin Experiment Station has experimented to find the relation of the time of cutting alfalfa to the maintenance of stand as well as the amount of yield and quality of hay produced. On a field of one-year-old Grimm alfalfa they cut seven plots when the alfalfa was partly in bloom. These gave an average yield of one ton per acre. Four days later five other plots were cut from the same field, with a yield of 1.3 tons per acre. "The early cut crop seemed to do well for a time, but after about thirty days the leaves began to turn yellow, while the plots which were cut later continued to produce a dark green growth. The second crop on all of these plots was cut on August 19, at which time the early cut alfalfa was only eight inches high, decidedly yellow, and yielded only .35 tons an acre, while the later cut alfalfa reached a height of thirteen inches and produced twice as much hay."

In another set, trials were conducted with two-year-old fields of Grimm and Turkestan alfalfa. Some of the plots were cut three times at the early bud stage, while others were cut twice at the full-bloom stage. The plots cut three times during the early bud stage were reduced in vigor, the stand thinned, and yielded three tons an acre, while in the later cut plots the vigor was maintained and there were no weeds. It produced 4.3 tons of hay to the acre.

### Kansas Experiments

The Kansas Experiment Station has conducted experiments for the past ten years, comparing the time of cutting to the yield of alfalfa. They compared the four stages of cutting, namely: the bud stage, tenth bloom stage, full-bloom stage, and seed stage. The bud stage plots were cut when the flower buds were well

We expect to follow the results of this work carefully and give our readers whatever information comes from it as it is of much importance not only to beekeepers but to orchardists as well.

formed, but before any blossoms appeared. The seed stage plots were cut when the seeds were well formed, but before they were ripe. The other stages are self-explanatory. Prof. S. C. Salmon, Secretary of the Kansas Crop Improvement Association, in reporting on the experiment, said: "Perhaps the most outstanding result of this experiment is the very marked decrease in stand on the bud stage and tenth bloom stage plots. This has amounted to practically 80 per cent in every case. These plots are practically overrun with grass. The full-bloom and seed stage plots, on the other hand, still have a good stand, and there is practically no grass mixed with the alfalfa. We feel confident as a result of these experiments that too frequent or early cutting injures the stand. Late cutting, on the other hand, seems to permit the alfalfa to hold its own much better than otherwise. We have secured the highest yield of alfalfa hay from the full-bloom plots. The yields of the tenth bloom plots were about the same, but the seed stage and bud stage plots were much below the other two in yield.

"The quality of the hay is also a point to be considered. We have found that in general the quality decreases with the time of cutting. The hay is of good quality, however, up to the time of cutting the full-bloom stage. The hay from the seed stage plots is ordinarily of very poor quality because of the loss of leaves. Probably the difference in quality between the very early and the full-bloom stage is not enough in general to justify the loss in stand as noted above. This, of course, will depend somewhat on the use to be made of the hay, and whether it is desired to leave the land in alfalfa. If one expects to plow up the alfalfa for other crops, there would be no material objection to cutting it earlier and securing somewhat better quality of hay."

To sum this up it means that the earlier the alfalfa is cut after the bud stage, the better the quality; however, the resulting stand increases up to the full-bloom stage. Every day that the grower of alfalfa leaves the alfalfa in bloom means just so much more honey to the beekeeper.

# Personal Recollections of the Editor

## Outapiaries and Transporting of Bees—II

IN a previous number I told of how we transported 115 colonies of bees, in August, 1880, from the dried-up fields of the hills to the low lands of the Mississippi which had been overflowed by what is generally known as the "June rise." Well, the following spring, of 1881, the river made another rise, but this time it was an April rise.

When we placed the bees on their stands the previous August, our attention was easily called to the fact that the spot where the hives were put had been covered with water during the flood. When the river began to rise in the early spring following, we consulted the farmers on whose land the apiaries were located and were told that there was the same danger of the land being flooded as the previous summer. They advised us to raise the hives up on stakes and risk the flood. But this did not suit me. The idea of having the colonies surrounded with water and of having to come and see them in a skiff was anything but pleasing. So, when the general newspaper information came that the Mississippi was at high flood along the borders of Wisconsin and northern Iowa, coming south, I concluded to move them. But it was already too late to get to them with wagons. Skiffs must be used. I called on a couple of farmers on the edge of the bluffs, near the low lands, and made arrangements with them to place an apiary on each farm, so that they would have the benefit of the crop of clover from the hills in June and of the fall flowers in August-September. Then I set about to get the bees away from the water.

The farmers on whose farms the bees were had each a skiff. But they could not promise me to use them for removing the bees, unless they did not need them to remove their livestock, calves, pigs and chickens. The cattle and horses were easier to remove, as they could be made to wade and swim in a flood that had but little current, usually.

So I had to look for skiffs elsewhere. In the city of Warsaw there lived a farmer-fisherman who owned two skiffs. I went to him. He said he had promised to help get two families out of the bottom within a couple of days. But if he was not needed, he would gladly help move my bees, for he had bees himself and felt that he knew how to handle hives. Here, again, I had no promise except a conditional one. Coming on to Hamilton, I went to a local fisherman who also owned two skiffs. He

promised his help for the following Monday. This was Saturday. Not feeling quite sure of having enough help, I went across the river to Keokuk and there hired an immense skiff, with two men to manage it.

When Monday came I started out with the Keokuk skiff, our local man having gone ahead. At Warsaw I was told that the Warsaw man had already gone. I was sure of plenty of help then. We pulled the skiff over the ridge of levee which protected the upper end of the bottoms and started to float down on a slough. Fences were invisible already in most of their length. Occasionally we found one that projected a little above the water, but the soft condition of the soil permitted us to push them over so as to pass. Winding through the low lands, we finally arrived at the farms and found that our men, anxious to help us in getting the bees to "terra firma," had already hauled away the greatest number of hives. We made the end of the job with the skiffs remaining and in an hour more we were at the foot of the bluffs, where eight skiffs were gathered together. The local farmer hitched up a team and, in a couple hours more, we had our bees on the slope of the bluff, 75 feet above the river's highest water and yet in full reach of the coming crop of fall flowers. They are there still.

Transporting bees, in cool weather, in spacious hives, where they are not necessarily confined on the brood, is an easy matter. We have often shipped colonies of bees in March, with no other ventilation than that afforded by the joints of the entrance block and of the cover. But when the weather is hot and the hive full of brood, it does not take much to smother them. I remember bringing three hives from Keokuk to our home, a distance of three miles, a fine morning of June, when the bees had been harvesting some nectar. Although the hives were closed but about two hours, the strongest colony was smothered. This was a lesson. We never take any chances now, and when we move bees in warm weather we use a screen, covering the entire brood chamber, with a space of about an inch between that screen and the brood frames, with a shade board at the top, and we strongly recommend that the hives be kept out of the sun, although a few minutes of sunshine at a time will not usually spell danger for them.

We have shipped bees all over the U. S. I remember that, when W. D.

Roberts, of Provo City, Utah, began his importation of bees into that territory, we supplied him with twenty colonies of Italians. This was in 1871 or 1872. He had already brought some bees there from the states. When we began importing queens on a large scale, in 1874-5, from Italy, we sold hundreds of queens in full colonies, after having wintered them here. Many people preferred that method of buying queens, because it did away with the risk of introducing.

Returning to our low land farmers, it is laughable to see how little they worry over a flood. They will imperturbably measure the rise of the water, every morning, when it is within a few feet of the door of their home and quietly await its fall. They know that when the Mississippi is at high mark it takes millions of barrels of water to raise it another inch, because of the immense width of the flooded areas. But what a nasty condition when the water falls! Every little swail is a marsh; every low spot in the road is a quagmire. To cross those bogs, they lay willow stems or fence rails side by side across the track, with earth and grass over them, and attempt to cross the bog over these.

If any of our readers fail to grasp the meaning of a road of this kind, let them read page 98, Chapter IX, of Mrs. Harriet Beecher Stowe's "Uncle Tom's Cabin," entitled "A Senator Is but a Man," in which she describes the "Ohio railroad of the good old times." It is almost an exact duplicate of some of the quagmire roads of the Mississippi bottom lands of forty years ago.

"And pray, what sort of a road may that be?" says some eastern traveler who has been accustomed to connect no ideas with a railroad but those of smoothness and speed.

"Know, then, innocent eastern friend, that in the benighted regions of the West, where the mud is of unfathomable and sublime depth, roads are made of round, rough logs, arranged transversely side by side, and coated over in their pristine freshness with earth, turf, and whatsoever may come to hand, and then the rejoicing native calleth it a road, and straightway essayeth to ride thereupon. In process of time, the rains wash off all the turf and grass aforesaid, move the logs hither and thither, in picturesque positions, up, down, and crosswise, with divers chasms and ruts of black mud intervening."

But I forget that I am speaking of forty-five years ago. At present each



of those bottom land farmers owns a tin Lizzie, at least, and they work their roads.

The difference in dates brings to my mind an incident which happened five years ago, when my sons again located some hives of bees on the bottoms, after the levees were finished and in good repair and the danger of flood was practically removed. We went to call on a farmer within a mile of the place where I had had bees years ago. He agreed to let us put some bees on his land. Then I happened to mention the fact that I had kept bees near there before.

## Vienna Congress

By Ph. J. Baldensperger.

I HAVE been recently invited by the sixty-third Wanderversammlung of German-speaking beekeepers, holding one of their big meetings in Vienna, Austria.

The President of the Congress, Dr. Herdth, of old Austrian nobility, managed the sittings with calmness and dignity. A beekeeper himself, he could fully understand and guide the proceedings. Dr. Armbruster is one of those thorough observers of whom we would like to see many in all countries. Many such learned bee students were present as Dr. Pointner, of Austria; Dr. Buchegger, of the Tyrolean district; Professor Kessler, of Czechoslovakia; Rev. Kitzberger, the humoristic Tobisch, better known as Yung-Klaus.

Dr. Jaiss gave "thoughts about beekeeping" above the grasp of many. Mr. Dengg insisted on the assertion that honeydew is a vegetable product and not, as many believe, excrements of insects. Drs. Buchegger and Pointner showed how they had conducted experiments, along with their classes, finding Dengg's experiments to be quite correct.

There was some scuffle about the "heimatbiene" (the home bees) against foreign races, in which the Italians were principally attacked. Central Europe has really no "home bee," so strongly claimed by Tobisch, against yellow bees especially. Since the introduction of Italian bees, which helped so greatly to settle the evidence of parthenogenesis, in the middle of the past century, Italian bees have become a hobby, while in fact they are neither better nor worse than the brown bee or the Carniolan, nor do they resist foulbrood any better. However, the Italian, the Carniolan, Banat and Oriental bees have been constantly brought in, and now the golden American is coming to us, just on account of the color. It is very doubtful whether any pure

"Where did you keep them?"

"On August Pierrot's farm, just above here."

"Pierrot? Why, he has been dead twenty-five years."

"That is true. But this was—let me see—in 1880."

"Oh! In 1880 I was just one year old."

Reader, that is how we grow old without thinking of the passing of the years. I am through with hauling bees. Let others do it now. All I can do is to tell you some of my experiences. They may be of use to you.

strain of bees exists in central Europe, Carniola excepted. What is needed in those countries is honey plants, plenty of honey plants, such as we saw in Canada and in the endless rolling hills of New York, Pennsylvania and Ohio.

Mr. Grunup, the representative of Riga, talked about 40 to 100 pounds of honey in his Baltic republic, and some of his hearers said: "Far-away birds have fine feathers." It is very difficult for sedentary people who have rarely gone out of their vicinity to understand the great difference between one country and another. A young fellow who had only come from Alsace told me, when I talked about camels and the sandy wastes of the Sahara, that such places were the work of my imagination.

Well, travel forms the mind, travel opens the eyes, to be sure.

We had a number of authors who told us their opinions about "popular beekeeping," sticking to the old skeps, or about combs to be renewed every three years, as the cells become clogged, etc. I have not yet seen any clogged cells, though some of my combs are over 30 years old.

Most of the live bees exhibited were flying freely in the big garden adjoining the hall. The bees were all of the Carniolan strain; nobody was stung, but we saw no "homeland bees."

There were many non-German beekeepers present, and that made the meeting lively. Each country had sent its best representatives: Professor John Rennie, of Aberdeen; Tokuda, of Japan; Popoff, of Bulgaria; Grunup, of Riga; Lundgren, of Sweden; Kitzberger, of Czechoslovakia; Snowadski, of Poland; Schupp, of Rauslen, and many more.

Dr. Rennie spoke of the dreaded *Acarapis woodi*, discovered in the researches on Isle-of-Wight disease, after Dr. Zander had announced the *Nosema apis* to be the chief culprit.

Mr. Lundgren, of Sweden, who, like Mr. Grunup in the Baltic provinces, works only with Dadant-Blatt hives, spoke of the more resistant Italian bee, in foulbrood cases, as compared with the northern bee. The Swedish bee is also the heather bee, which Americans call the common black bee and which cannot resist European foulbrood (*Bacillus pluton*). Lundgren insists upon the damp weather being the culprit, whilst in sunny countries foulbrood cannot do so much harm. Of course I inhabit sunny countries, but I know that neither the brown bee nor the lively Tellian, nor the Palestine bee, can withstand the germ of American foulbrood when it finds its way there. I spoke about an apiary in the plains of Sharon which I visited in 1922 in full health, and which, my brother Emile told me, was swept away by *Bacillus larvæ* in 1924.

Professor Toluda, of Japan, spoke of the Italian bee, introduced into Japan some twenty years ago, which proves a deal better than the native Japanese, an outcome of *Apis indica*.

Such and many other speakers did we hear during the six days. Three days were for the Congress, so to speak, and three days were local beekeepers' days, and presided by Dr. Rodler, President of the Viennese Beekeepers' Association.

The exhibition was very elaborate. A collection of apiarian implements, usually stored in the city museum, filled quite a section. Skeps of every imaginable form, from the earliest to the modern skep still in use, smokers, and extractors from the first invented by Hruschka in 1865 to the modern radial extractors. The original Hruschka extractor resembles in nothing but the principle of centrifugal force the modern extractors. It is simply a kind of pan, with a sieve inside, against which the comb was laid, and a handle across the pan, to which a rope was fixed to swing it around. Then there was the first move towards frames, simply bars as used by Dzierzon, which in fact were invented 2700 years earlier by the Greeks; the German "breech-loader" hive, worked from the back, still in use, in spite of Dr. Gerstung and others trying to introduce the top-opening hive.

Honey and wax exhibits were plentiful and beautiful, in another part of the building, showing as usual different colored honeys, principally from Austria and the adjoining countries.

Bee films from Sweden and Germany were shown and presented one of the most interesting features of this memorable Congress. No congress ought really to be without them; it helps so much to fix every feature in the eyes of the public.

Nice, France.



# With the Bee Men of Alberta

Prospects and Problems of Honey Production in the Newest Beekeeping Region of Canada

By Frank C. Pellett.

IT is not safe to venture an opinion as to the northern limit of successful honey production. It has been but a few years since it was thought that North Dakota was too far north for beekeeping. Now we find many of the most extensive producers located there, and they are getting the largest average yields per hive of any state in the Union. Likewise the prairie provinces of Canada, where it was thought that bees could not succeed, are proving to be among the best areas, and properly selected locations offer safe returns.

Beekeeping can no longer be considered so much a matter of latitude as of available forage and proper methods of management. Bees are now kept profitably as far north as the Peace River, in northern Alberta, and nobody can say how much farther north it will be possible to keep them successfully, once the country has been developed. When W. D. Albright gave an account of his experience with bees at the Beaverlodge Experiment Station in the May, 1925, issue of this Journal, it was a surprise to many to learn that bees could be wintered successfully so far north. A glance at the map will show that a line drawn from southern Alaska to Hudson's Bay will cross the Peace River not far from the Beaverlodge territory.

Bees can be kept in confinement for a long period of time if the cellar is dark, temperatures are uniform and not too low, and the stores are

good. Most successful beekeepers in the north country provide their bees with sugar syrup for winter feed. There is little waste matter in granulated sugar, and the bees can stand a much longer time without a flight when fed on sugar syrup than on the honey which is gathered in late fall from goldenrod and aster.

## Alberta Opportunities

Not all of Alberta is good beekeeping territory now, but this does not imply that it may not become so soon. Great changes are coming in the north country and regions where bees would have found little forage a few years ago now offer good pasture. The clearing of the bush lands in many sections has been followed by immense growth of fireweed, one of the finest sources of good honey. In other sections the planting of alfalfa and sweet clover by the farmers has provided good pasture, where bees could hardly have been kept before.

Few visitors to western Canada are prepared for the immense areas included in a single province. Alberta, for example, has an area about fifty times that of Connecticut, or nearly five times that of Iowa. It is to be expected then that conditions will vary greatly in different parts of the province. I was impressed with the fact that there are three quite distinct beekeeping regions, in Alberta, with large areas of intermediate country where conditions more or

less similar to two of these regions are to be found.

The Peace River region has already been mentioned. At the time of my visit there, at the end of July, the hive on scales was showing a gain of five and six pounds daily. One day the scales showed a gain of more than ten pounds. G. F. MacKenzie secured a surplus of 70 pounds from a nucleus in 1923. The long days compensate for the short summers and plant life develops very fast when summer does come. When C. B. Gooderham, the Dominion Apiarist, visited the station he hived a swarm of bees at 10 o'clock at night and it was not yet dark.

A drive of two or three hundred miles through this region showed plainly that at present there is only one important source of surplus and that is fireweed. About the settlers' homes there are plenty of such trees as box elder, which the Canadians call Manitoba maple; caragana; and the native saskatoon, which we of the states call Juneberry or serviceberry. Dandelions are coming in slowly and a few patches of clover are present here and there. A very large portion of the region is still in the wild and much of the cultivated area is seeded to wheat, which offers little for the bees. The few trials with alfalfa and sweet clover offer promise of entire success with these two best honey plants. We may look forward with confidence to an abundant pasturage from them when the



Alsike and white Dutch clover in second bloom. Beaver Lodge Station in September.

cultivation of the soil shall finally displace the fireweed. Although this northern region is not likely to yield as large crops of honey as will be secured farther south, there is every reason to believe that bees can be kept quite profitably there. The individual beekeeper, in that section, as in others, should start in a small way and increase slowly as he learns the possibilities of his neighborhood. I passed many places where the indications were that only a few bees would find sufficient forage to provide good crops. In other places a larger number could probably be kept safely. The available pasture will determine the number.

#### The Park Region

In the central part of the province we find the park region, where there are belts of trees interspersed with small prairies. Edmonton is in the northern fringe of this region, which extends eastward across Saskatchewan and Manitoba to Winnipeg. Some of the best natural bee range of the entire province is to be found in this park country. Fireweed grows abundantly, following every burn, and, in addition, there is an abundance of snowberry, some wild raspberry and, best of all, the giant hyssop or anise-hyssop. Little has been written about hyssop as a source of honey; it is a major honey plant which will yet be far more appreciated. Its honey is about the color and body of that from white clover, with a peculiar minty flavor unlike anything else with which I am familiar. Because of the tariff, it is not likely to become known in the markets of the states, but it should become well known in all the Canadian and English markets. G. M. Newton, of Selkirk, Manitoba, has



W. D. Albright, Superintendent of the Beaver Lodge Station, and George Neeley, assistant.

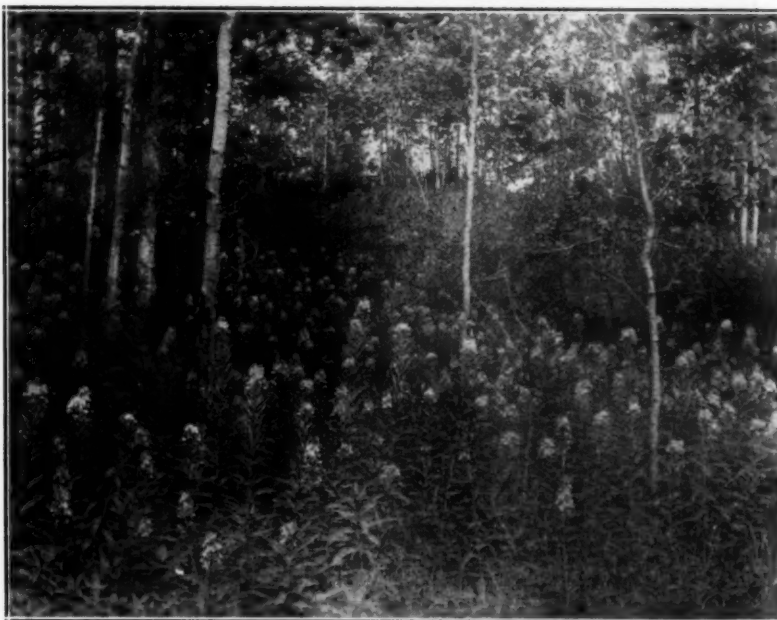
apiaries in hyssop locations, as do several of the Alberta beekeepers in the vicinity of Edmonton, but most of the hyssop locations are unoccupied. I drove hundreds of miles through the park country where hyssop was plentiful and found but few bees. At Edmonton, Duncan Chalmers, who is one of the largest beekeepers there, reported that forty per cent or more of his crop comes from anise-hyssop.

In walking through the woodlands,

in this region, I found what appeared to me to be sufficient forage to insure safe returns from beekeeping over a series of years. Poplars are abundant and provide early pollen. Willows and dandelions offer early nectar as well as pollen, and wild raspberry should give occasional surplus. Fireweed, snowberry, hyssop and Canada thistle should insure some surplus every year. Goldenrod and aster, everywhere abundant, indicated a good fall flow. With the



Apiary of C. G. Riedel, of Lethbridge, made from packages shipped from California.



Fireweed is common in all the bush country from Winnipeg to the Peace River.

farmers planting alfalfa and sweet clover as well as some buckwheat, failures should be rare.

#### The Irrigated Region

In southern Alberta, there is a small area, around Lethbridge, which is under irrigation, and there we find conditions very similar to those of the irrigated country in the Rocky Mountain States of Colorado, Utah and surrounding region. With controlled moisture the honeyflows from alfalfa and sweet clover are quite dependable and climatic conditions are such as to favor heavy nectar yields. This area is of limited extent and it will be but a short time until it is fully stocked with bees. Dandelion, caragana and other ornamental trees and shrubbery furnish the early pollen and nectar. There is some white Dutch clover on the irrigated farms and some alsike is grown for forage. Practically all of the surplus comes from alfalfa and sweet clover, however. The flow starts somewhere from June 24 to July 2, according to the records of the apiary at the experimental station, and lasts until the first or second week in September. The heaviest yield gathered by the colony on scales for one day was 21 pounds, on July 23, 1923. The largest production for a single colony was 472 pounds, with an average for the apiary of 189 pounds per colony that year. These yields are similar to the reports from other localities where alfalfa and sweet clover are present in large acreage under similar climatic conditions.

The importance which the government places on the future of beekeeping in the province can be judged from the fact that H. T.

Luther is employed on full time in experimental work with bees at the Lethbridge station. R. C. Schurtz, of Sterling, and C. G. Riedel, of Lethbridge, are the two most extensive honey producers in the irrigated region, and probably in the entire province of Alberta. Schurtz came from Utah, where he followed beekeeping extensively for some years. Riedel came from California, and previously kept bees in Central America.

In 1924 Riedel shipped 500 packages of live bees from California and, in addition to drawing all his combs, secured an average yield of 100 pounds per colony. He is in-

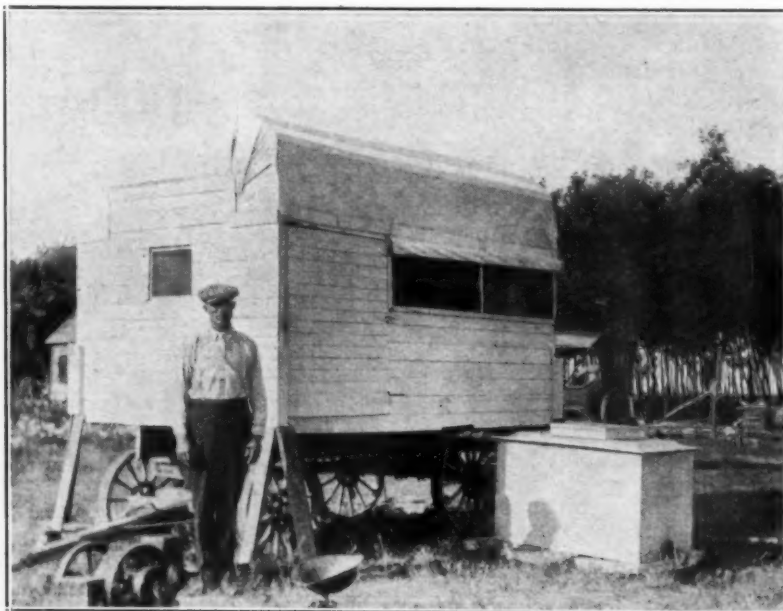
creasing his apiaries and putting in an up-to-date extracting plant. The fact that 50,000 pounds of sweet clover seed was sold by Lethbridge dealers during the past season assures him that there will be ample pasture for several years to come.

#### The Range Country

A large portion of Alberta is subject to long dry spells and is accordingly best suited to grazing. Calgary is the center of this region, which is probably the poorest beekeeping part of the province. However, even in the dry range country, I found farmers who were growing sweet clover successfully, by dry farming methods, and who were getting fair crops of honey as a result. What the future offers for this section no man can tell. If sweet clover succeeds permanently, under these conditions, beekeeping will also succeed.

The Experiment Station at Lacombe is situated between the park region, which is a very good beekeeping area, and the range country, which is a poor one; but they are keeping bees successfully there. A. J. Morris, apiarist at the station, reports that the crop is all gathered by the fourth of August, all the surplus coming in July and the first few days of August. This offers a difficult problem in proper preparation of the bees for winter. Several hundred miles farther north, in the Peace River section, the bees bring in honey until October. The average at the Lacombe station has been 65 pounds of surplus per colony for a five-year period. In a favorable season as much as 100 pounds have been harvested.

The western prairies offer good



R. C. Schurtz, of Sterling, Alberta and his portable extracting outfit.



home markets for honey, due to the lack of home-grown fruit. It is interesting to note that cigar stores sell honey along with candy, tobacco and gum. In one such store, in the range country, the proprietor stated that he sells thousands of pounds of Ontario honey at \$2.20 per ten-pound pail. He was running a candy and tobacco stand in connection with a pool room.

It is fortunate that the government maintains an experiment station in each of the important districts

of the province, since systems of management must vary somewhat to suit the difference in environment.

Alberta beekeepers have organized an association and the province is lending assistance through the College of Agriculture and the Department of Agriculture. While Alberta is the newest of the beekeeping fields, it bids fair to be among the best, and everything indicates that it will be but a short time until trainloads of honey will be produced there for export.

## Beekeeping Under the Soviets

By A. S. Orloff.

ACCORDING to the Agricultural Census of 1920, 2,141,901 colonies of bees were registered in 58 provinces of Soviet Russia against 3,880,000 colonies in 1910. These provinces do not include Ukraine, White Russia, Turkestan and Caucasus, where in 1910 there were about 1,860,000 stands of bees. If the decrease there was in the same proportion, there are now in all of Russia only 3,500,000 colonies.

It is not difficult to indicate the causes of the decrease. The severe restrictions of war time in the distribution of sugar prevented a sufficient supply of sugar for the needs of beekeepers, in districts suffering from the lack of stores for wintering, and many colonies, therefore, perished. Many more perished during the first years of Bolshevik rule, due to confiscation of apiaries, or transferring them to ignorant people, or from excessive natural (paid with honey and wax) taxes imposed on beekeepers by local Soviet authorities, and also by wholesale robbing of apiaries as honey became dear and thieves remained unpunished.

As a result, the primitive peasant's beekeeping was considerably injured. Modern bee culture, however, quickly cured its wounds and therefore, not only held its position but even considerably increased. In the 58 provinces mentioned, the number of colonies in frame hives increased between 1910 and 1920 from 563,233 to 788,719 and made 36.8 per cent of all colonies against 14 per cent in 1910.

There were approximately 1,100,000 frame hives in Russia in 1920, most of them of modern European-American type, chiefly the Dadant-Blatt and Langstroth-Root.

The average Russian apiary is about 7 colonies, as most of them belong to peasants. In Soviet Russia,

248,875 families keeping bees were registered, possessing 94 per cent of all the colonies. In most provinces there were also amateur and commercial beekeepers with large scale apiaries with as many as two and three hundred colonies. The opportunities for beekeeping in Russia are most favorable in many districts, being equal to the best places in the United States and Canada. The number of colonies to the mile is not significant. There are only 5.8 hives to 16 square miles, which is the average area of bee flight.

During the two years before the war, modern beekeeping in Russia advanced considerably, resulting in centers of organization for the movement. There were about 200 associations in different parts of the country. From 1905 to 1913 there were five All-Russian Beekeeping Congresses and there were also edited 15 beekeepers' monthly and weekly publications. We had, in addition, translations of almost all the best bee books and many good original works, both scientific, practical and popular.

The years of war and revolution struck a heavy blow to Russian beekeeping, however, and stopped its progress for a time. Beekeepers' associations became inactive, most of the bee journals were stopped. During the terrible years, 1919-1920, the energy of even the most enthusiastic beekeepers was nearly exhausted. Fortunately, 1921 brought a relief. The Soviet government recognized the importance of beekeeping and edited decrees in its defense and beekeepers again received help and assistance from central and local authorities. This offered an opportunity for the restoration of beekeeping. In 1921, the first beekeeping monthly journal, "Beekeeping Business," began to be published. Five

co-operative organizations were formed in 1921 and 1922 and several conferences were held on beekeeping, the most important being the All-Russian Congress of the representatives of Russian local beekeepers' organizations. About the time of the last Congress, there were no less than 300 co-operative organizations, with an average membership of 200 people, the total number of organized beekeepers being about sixty thousand.

Thus 1921 and 1922 opened the beginning of restoration of systematic and organized work. Unfortunately, the years 1921, 1922 and 1923 were unfavorable for honey, owing to natural conditions, and yet considerable progress was made.

The most important organization is the Central Co-operative Rural Union, a practical organization which centralizes commercial work of all co-operative local societies, and it is trying to unify the sale of honey and wax, the producing and purchase of supplies for all associations and societies.

The union established a special plant for the manufacture of hives, supplies and foundation. The monthly magazine, "Beekeeping Business," began its fifth year of publication in 1925. It is the central organ of all Russian organizations and I think will take its place among the best international bee periodicals.

Public experimental and demonstrative apiaries in Russia have a good staff, large programs. The attitude toward them of central and local authorities is very sympathetic at present, although there are only small sums to spend for them because of the pressure of more urgent agricultural needs, consequently the work develops very slowly.

In summarizing the position of Russian beekeeping up to 1924, the "Beekeeping Business" says: "Generally, taking the territory of the Soviet Union as a whole, we might say that the revival of our beekeeping is rapidly progressing and before long we will reach along where the numbers of colonies will be equal to the pre-war figure."

In the fall of 1925, the second Congress of Russian Beekeepers' Societies and Unions will take place. It is hoped to lay down the plans of systematic work for the next few years.

We are fully convinced that Russian beekeeping has entered on the path of rapid progress and we are looking at the future with full confidence.

# Do Bees Reason As Human Beings Do?

By Allen Latham.

IT is necessary, in discussing this question, to limit the meaning of the word "reason." If we allow too broad a definition, then bees do reason. As my old professor of psychology in college used to tell us: "Let me define my own terms and I can prove anything." Bees do many wise things, reasonable things. They perform acts which meet their needs so nicely and completely that many of us are inclined to say that bees reason. Considered from a strictly limited definition all their acts can be catalogued under instinct and probably not one of them can be ascribed to logical reasoning.

It was my good fortune, at the winter meeting of the Ontario beekeepers, to pass considerable time profitably in the company of Mr. Baldensperger, a rare old beekeeper of France. I was much interested to find that Mr. Baldensperger contends that bees do reason in the strict sense of the term. The observing beekeeper cited two illustrations which, to him, proved conclusively that bees reason. I will give each of these in turn and will strive to show that there is no true reasoning shown here.

For the first instance there was cited a case in which there was a small circular opening in the back wall of the hive. This hole was covered with wire cloth and the bees were at work on the inside of the hive filling the meshes of the cloth with propolis. As the work progressed one bee was observed at work upon the outer surface of the cloth. Mr. Baldensperger contends that this bee must have reasoned. She could not get through the cloth and must perforce fly outside the hive and half way around the hive to reach the opening. Now, if this bee did actually reason as would a human being she would proceed as follows: She would gaze at the work from the inside of the hive and think as follows: "It is slow work doing this task from one side only. It is also crowded here. The cloth has another side. Why should I not go to the other side and work?" So she leaves the hive and gathering some propolis she flies straight to the opening in the back of the hive and proceeds with her work.

I contend that no such thing happened. This bee discovered the outside of the wire cloth accidentally. She may have been attracted by the odor of the hive issuing there. She may have been crawling over the hive as so frequently happens in hot

weather. Finding bees at work closing the opening she goes to work there. Many other bees probably discovered the opening from the outside, but none of the others were of an age to respond to the stimulus offered there. There was a stimulus. When bees close a wire cloth from only one side, the other side is left rough. Propolis is pushed through and a ragged surface is left. What bee of the right age finding that ragged surface could forego the impulse to smooth out the same? There may have been reasoning here, Mr. Baldensperger, but there is no proof of it.

In the second case cited the cover of a hive was slightly to one side, leaving a crack along one side. The bees here built a barrier to rain and wind. Mr. Baldensperger states that this barrier was a well-defined trough at one end of which was a spout so that the rain ran along the trough and spurted off by the spout. Here we have a case of reasoning of a rather high order, if indeed it be reasoning. The bees not simply built a barrier, but they built it as we would, so that the water would not run down the wall of the hive, but would run clear of the hive.

Had I seen this work of the bees I feel assured that I should find some inkling of how the bees happened to do the work in just that manner. Having never seen the work, I must reason from analogy and search rather blindly for the true causes. The closing of the crack is simple in the extreme. Now most covers of that nature are warped more or less. Would it not follow, therefore, that the bees would build that propolis barrier as an inclined sheet running the length of the hive and stretching from the slightly higher edge of the cover to the slightly lower edge of the hive body. In the heat of the sun the bees would find it impossible to keep this sheet of propolis from sagging. A trough-like depression would thus come into evidence the whole length of the barrier. So much for the trough. The spout is more difficult. In the very nature of things, however that spout must not be allowed as a product of engineering reasoning on the part of the bee. Nor could it arise through instinct. It is inconceivable that such a thing could occur in the development of the honeybee with sufficient frequency to instill an instinct to meet the case. That spout was an accident which has some simple explanation. The bees might have extended the

sheet slightly and the end, sagging, took on a cylindrical shape. The cover might have been moved through some external agent slightly forward, carrying with it the sheet of propolis. No, Mr. Baldensperger, in your love for the bee you should not have allowed yourself to neglect any and every possibility of explaining that trough without ascribing it to reason on the part of your pets.

In our conversation I cited a case which at first thought seems to offer evidence that bees do reason. Some fifteen to twenty years ago I bought a golden queen from a queen breeder well known then. These bees were very golden and could be easily recognized wherever they showed themselves. These bees had two very marked characteristics. They were eager on the hunt for stores and they were great on home defense. No robbers ever troubled that colony, but not so vice versa. No nucleus or otherwise weak colony was safe thereabout. I had eventually to get rid of this queen and her bees because I could not keep a queen-mating nucleus anywhere near. I was teaching at the time and was unable to follow the *modus operandi* of these robbers as well as I should have liked to do, but as some seven or eight nuclei were in process of being robbed out I was able to get a fairly complete story.

Half a dozen bees, one by one, would alight at the entrance of a nucleus. When challenged they would not fly away or try to escape as do most robbers, but they would cringe and smirk after the manner of lost bees. Acting so humbly and ingratiatingly they would soon be unmolested. At once they would take upon themselves the duty of defending the entrance of their new home(?) It is an actual fact that I noted nuclei which had almost entirely golden bees as entrance guards, though the regular inmates of the nuclei were not golden. In every case, after the entrance came under the guard of these yellow bees, the nucleus was doomed unless I interfered. Soon other yellow bees would appear and not being molested would enter the nucleus shortly to come out full of honey. There would be no fighting to speak of, simply quiet robbing until the nucleus was left with empty combs.

Shall we say that the yellow bees planned this out in council? Surely it was not a case of individual reasoning. If it was reasoning it must have been accompanied by an interchange of ideas. Like this: These yellow bees conspired as follows: they talked together and said: "Now, you girls go to those nuclei and in-



gratiate yourselves until you are accepted as loyal inmates. When you have succeeded in this you take upon yourselves the task of being entrance guards. When you have become well established give us word and the rest of us will start in and get the honey."

Strange as the happening was, and at first sight so full of mystery, it has, nevertheless, a simple explanation. As was stated at first these bees were eager on the hunt and eager on defense. Seeking new sources of nectar and smelling the odors from the slightly guarded nuclei, they sought admittance. They were not robbers and had no sense of guilt. They did not try to get away. At this point it is perfectly feasible to think that some strains of bees, through long environment where robbing was easy, might contract that sneaky behavior until it became instinctive. As several minutes passed before these strangers were given a pass, the object of their alighting at the entrance has been lost and the other strong instinct asserts itself. It was second nature for those bees to guard a hive entrance, and so they took upon themselves that duty. When their own sisters, alike on the search for sweets from any available source, arrived, their admission to the nucleus was not questioned. They simply went in and helped themselves to honey.

I am strongly of the belief that the bee probably has no habits now that it did not have a million years ago. All cases of apparent reasoning have easy explanations if we will but seek them out.

(If Charles Dadant were still alive, he would probably take up the cudgel with Mr. Latham, for he was of the opinion of Packard, the entomologist, whom he quoted in "The Honeybee" as follows: "Bees are endowed with a kind of reason, differing perhaps only in degree from that of man." Charles Dadant, to show that bees could reason to a certain extent, mentioned the following:

He had a young queen fertilized in a nucleus. Needing that queen, he caged her, placed her in a queenless hive, and united the nucleus to another. Two days later, while releasing the queen from the cage, he had the misfortune of letting her escape and she took flight and disappeared. He immediately went to the spot formerly occupied by the nucleus, which was the only spot she knew, since she had gone from there on her wedding flight. He found her there, hunting for the missing nucleus. But she was too quick for him and he missed her again and she disappeared for the second time. Go-

ing back to the hive from which he had released her, he found her on the alighting board, being welcomed by the guards at the entrance. He held that this queen must have reasoned that, since her hive was missing, she must go back to the spot from which she had escaped. We must acknowledge that, bees, horses and dogs often act as if they could reason better than some men do.-- (Editor.)

## Honey in Auto Radiators

By E. G. Carr.

If one were to believe all the reports of terrible things happening to the auto radiator when honey is used in it as an anti-freeze, he surely would never use it.

One report has the honey eating holes in the radiator; another has the "works all gummed up" with the honey, making it necessary to disassemble entirely the auto mechanism to clean out the "taffy." From another report it might be inferred that when honey is put into the radiator the car is converted into a candy factory, since one writer says he removed from the "innerds" of the car a stick of candy.

Someone has said there is a special guardian angel for auto drivers. I guess it's a good thing for the drivers, if they use the other parts of the car with no more care than they use the honey-water solution in the radiator.

Then we are told the honey-water mixture must be boiled, skimmed, alcoholized, and dear knows what more, to make it behave seemly in the radiator. I don't know what sort of material it is which requires so much doctoring.

I am reminded of Dr. Miller's recipe for preparing bee feed which is to use wet water and dry sugar.

I am appreciative of the great differences in climate in this country which may have a great deal to do with the need of "fussing" with the honey-water solution. However, for New Jersey and a like climate, a half and half solution, assuming the honey is of good weight, gives satisfaction when used properly.

Five precautions should be observed when using this anti-freeze solution. First, the mixture must be made before it is put into the radiator, not mixed in the radiator, as has sometimes been attempted. Second, the radiator should be filled only to within two inches of the top to provide for expansion without waste. Third, the water system must be absolutely tight. Fourth, the lower half of the radiator should be protected with cardboard or something similar. Fifth, when the temperature is very low the motor must be

"warmed up" before starting out on the road, to insure the solution being in a flowing condition. It may become semi-frozen at low temperatures and fail to circulate properly until warmed up.

There are two outstanding advantages in the use of the honey-water mixture. These are its dependability. Evaporation of the water only makes the mixture less prone to coagulate, whereas when alcohol is used one is never quite sure that a quantity sufficient to prevent freezing is in the radiator.

If perchance the temperature should be low enough to cause freezing of the mixture, it is more of the nature of slush and when it again becomes liquid there is no harm to the radiator through expansion.

New Jersey.

## A New Honey Plant in the Southwest

When the writer visited New Mexico last winter, J. W. Powell, of Mesilla Park, spoke of a plant which was of considerable value to the bees in one of his yards. At that season none of the plants could be found, but when they came into bloom the past summer specimens were sent to the office of the American Bee Journal. Since it was not recognized by any member of our staff it was passed on to a well-known botanist for identification, who sent it on to Paul Standley, Curator of Plants in the National Museum.

To the surprise of everybody interested, it was identified as a native of the old world, which had not been previously known to occur anywhere within the United States. No common name is known here, but in Europe it is known as Syrian bean-caper. The scientific name is *Zygophyllum fabago*.

The plant has become established in the vicinity of the apiary shown on page 318, July number. Mr. Powell states that the bees begin roaring on it as soon as the first blossoms appear and stick to it until the last ones fade. He says he has never known it to fail to produce nectar and apparently it is a valuable addition to our honey-bearing flora. Mr. Standley writes that he can find no indication that the plant is likely to become a weed pest if its range is extended, and can see no objection to the beekeepers planting the seed. Since it thrives in a location where rainfall is light it is well worth while for beekeepers to give it a chance to see what it will do under similar conditions elsewhere. Those interested in securing seed should write direct to Mr. Powell.

F. C. P.



# Honey from English Ivy (*Hedera Helix*)

By the Foloppe Brothers

WE have often heard the statement made by foreigners traveling in France, that the principal charm of our land is in such a variety of aspects in landscapes, in a small scope of country. Indeed, we do not have any monotonous, immense plains, which fatigue the tourist, but a constant changing panorama, which retains attention. Our wealthy Normandy may be quoted as an example of this. Whether we travel through the "Valley of Auge" with its rich pastures, or whether we go up the river "Orne" to visit the rocky and picturesque "Norman Switzerland," we have a constant change of scenery.

When we are interested in the subject of beekeeping, we can ascertain that the flora is also varied, owing to the modifications brought about by the change of soils. In the country of Auge, the only two interesting honey crops are harvested from the apple blossoms and the white clover. It is a clay soil.

In the plains, the lime soil is favorable to sainfoin and to the clovers. In the upper valley of the Orne, we find soils like those of Brittany, in which granite and sandstone prevail. Here the greatest development is reached by buckwheat. These three different regions may be found within a space of 35 miles.

Allow me now to draw your attention to the small, wild corner called

The following description, accompanied with photos, was received from the Foloppe Brothers, of France, the same who gave a very interesting description, with cuts, of how the bees thin out comb foundation, on pages 145 and 174 of the American Bee Journal for 1911. They are great observers.—Editor.



Blossoms of the ivy.

"Norman Switzerland," through which runs the wild stream of the "Rouvre," tumbling some 250 feet below the "Roches d'Oetre," and showing in its numerous small cascades many trouts with golden flanks. An immense boulder stops its course and its speed in a small circular valley; but the stream passes around it by making a curve of a half mile. It is near that spot that you may find us, friend reader, with our apiary in a small enclosure.

The days are getting short, the pale sun, low upon the horizon, announces the approach of winter; the weather is mild and damp and the humidity of the atmosphere causes a heavy dew upon the tens of thousands of apple trees which, in spite of stakes and supports, are literally breaking down with their load of fruit. At this time, the honey crop is over. We have extracted the last of the buckwheat surplus, we have packed the bees for winter and are now harvesting the apples, as our neighbors do.

But as we come to the trees nearest to the hives, we notice a change from the odor of ripe fruits that pervades the air, to an unknown, undefinable perfume, both sweet and strong. The bees are not quiet, they are working actively and come home heavily laden. We are now in front of the hives and the odor is almost excessive, resembling that of syringa



European ivy covering an old building.

or tuberoso. Towards evening this odor becomes still stronger. Whence does it come?

You are probably aware that, sometimes, we are unable to find that which stares us in the face. This was the case and it was accidentally that we found a clue.

One of us was taking honey to the railroad station, and, in turning a corner, recognized the same odor. A very plain buzzing drew his attention to a steep hillside covered with ivy in full bloom. This was the blossom that gave this penetrating perfume, for the delicate little yellow blossoms were covering the entire abrupt face of the stone. We had often seen bees on the ivy blossoms, but had never till then given it any attention. We thought that, in this late season, they yielded only abundant pollen. Although very common through the country, the European ivy is found only on old trees, on ruined buildings, and we had never had an opportunity of noticing its subtle odor, which cannot be forgotten. In this particular instance, the ivy found favorable conditions to its development on the abrupt stone wall of the hills which it covers entirely with a green mantle; a real vertical field in inaccessible spots.

Having discovered the course of the yield, we tried to determine the value of the product; notwithstanding the lateness of the season, we managed to secure some 20 pounds of the nectar, selecting the unsealed combs, so as to avoid as nearly as possible mixing it with other honey, especially buckwheat honey.

This honey was comparatively thick, perhaps owing to the low temperature; its aroma was very pronounced and even if there was some mixture of buckwheat, it was sufficiently *sui generis* to cover up the strong aroma of buckwheat honey.

Later, and in spite of the great humidity of the atmosphere, it granulated readily; its strong aroma was noticeably weakened. We propose to make a chemical analysis of it whenever we can get any of it entirely free from buckwheat honey. We were astonished to find that it does not have the bitter flavor of the leaves of the plant, neither does it seem to possess the perniciousness that might be expected from a plant with very purgative properties. We ate it carefully at first, freely later, without suffering the least illness.

This honey may be positively classified as aromatic. Its grain is very fine, in granulation. Its color is similar to that of the flesh of the apricot. Its flavor, like that of all the aromatic honeys of southern countries, is preferred by people who are accustomed to them, while the mild honeys of the North, like clover or sainfoin, appear to them to be

tasteless, while to us, northerners, it reminds us of a pleasant pomade. Personally, we will say that we consider it as acceptable, only. But this late harvest may prove of real value in seasons of short crop.

(Let us state that the name "English" given to this ivy, in this country, is like the name "English walnut," too specialized, for the ivy and the walnut are really "European."—Editor.)

## The Book of Rural Life

The latest set of books dealing with agriculture bears the title, "Book of Rural Life" and a most comprehensive work it is. Ten volumes of beautifully printed, substantially and attractively bound material make up the set. Nothing else approaches it in extent or workmanship. Each article is signed by a well-known writer who is recognized as an authority in his particular field. With a list of 250 such contributors the whole field of agriculture is faithfully covered.

Five years of time and a quarter of a million dollars in money went into the making of this set of books. It should be supreme in its field for many years to come. With 6,000 illustrations of animals, plants and rural scenes, besides 100 color plates, there are few pages without one or

more pictures to make clear the text material.

Unlike most books of similar nature it was not hastily compiled by making a rehash of bulletins and books already published, but every article was written especially for this work.

It is only after using the books for some time that one appreciates the thorough manner in which the work has been done. There are few subjects relating to rural life which are not included and within the covers of this set are to be found a liberal education in agriculture for one who will make use of the wealth of information provided.

John A. Bellows, under whose direction the work has been compiled, comes from a family of well-known stock breeders, and this work is the fulfillment of a long-time purpose. He has succeeded beyond any similar effort in this or any other country. Space will not permit a proper review of this great work. Even to list the names of the editors and contributors would require a surprising amount of room. The publishers, the Bellows-Durham Co., of Chicago, have issued circulars describing it more in detail. They are to be congratulated on the contribution they have made to the literature of agriculture.

## Biology Class Studies Bees



York, Nebraska, biology class at the Palmer apiary.

The Republican of York, Nebraska, in a recent issue tells of the visit of the biology class of a local educational institution to the apiary of C. B. Palmer, Sr., where they learned something of the practice of the beekeeper as well as seeing the way the bees live. There is no more inter-

esting subject in natural history than the honeybee. The life history of the insect together with the building of its combs and the storing of honey are a never failing source of question to the naturalist. Mr. Palmer treated the thirty members of the class to as much honey as they cared to eat.

# THE EDITOR'S ANSWERS

When stamp is enclosed, the editor will answer questions by mail. Since we have far more questions than we can print in the space available, several months sometimes elapse before answers appear.

## INSPECTION METHODS

I have read and re-read articles on foulbrood in the bee journals for the last twenty years and still we have it with us with all the inspection and inspectors in the different states. It has been in New York State ever since Moses Quinby's time. Now don't you think it is due more to the methods of inspection than anything else for its being with us so long? Why is it we cannot get rid of it at once in a season? If our methods of inspection are right, then it is other causes.

Now, as I personally see it, I think that the proper way to inspect to get clear of the foulbrood is to go to an apiary and begin at hive No. 1 and take out every frame in it, look it over carefully and note the condition and jot down the same; then go to hive No. 2 and do the same until all the hives in the apiary are inspected, then you have a true report of the inspection of that apiary to send in to the State Department, and if there is any foulbrood it should be followed up until it is cured.

This method should be followed by the inspector in every apiary; it makes no difference if there is only one hive in an apiary, it should be inspected. The inspector should look up these one-hive apiaries so as to know the condition of all the hives in a locality, because a one-hive apiary will be the means of spreading foulbrood to all other apiaries if it has the foulbrood. A commercial apiarist will see that his apiary is kept clean, for he depends on it for a living.

Now, will you let me know through the American Bee Journal the methods the inspectors follow, how many apiaries a day or how many hives they inspect a day, or what does the State Department ask of them for the money paid, or how many hours a day are they asked to work, and salary paid, and or how long are they hired, one year or five?

## NEW JERSEY.

Answer.—I can answer in a general way that the reason why foulbrood is not cleaned up at once is because we do not dot our "i's" and cross our "t's" as we should. We are careless, more or less, and those who find the most fault are very often the most careless.

You are perfectly right in saying that even one-hive apiaries should be inspected. But I don't believe you are correct when you say that the commercial apiarist will always destroy foulbrood. I remember visiting a commercial apiary, in Colorado, long before we had foulbrood in Illinois, and the owner told me that he never expected to get entirely rid of foulbrood. Well, when I saw his methods of treatment I did not wonder at his failure.

Regarding inspectors, you must remember that in this country of "States Rights" there are as many different laws and as many different methods of applying them as there are states, forty-eight in all. What is wrong in one state is not wrong in another, so it is a jumble, in all criminal matters. It will take much longer to do away with foulbrood than if we had a uniform system.

However, I believe that if enough money was voted in each state, to fight foulbrood, we would overcome it in a few years, especially if the commercial apiarists should do their best to secure good inspectors and would help them by supplying them with all necessary information. But enquiries like yours are always helpful, to awaken public action.

## DEATH RATE IN CELLAR

I have nine colonies of bees. I carried them into the cellar on November 7. I have had one window open a trifle all the time, but no light let in.

One colony of blacks are dying at the rate of about one-half teacup or more per day. There seems to be a good-sized cluster even yet. When they were in the cellar they were clustered under the frames about to the bottom board ( $\frac{3}{4}$  inch). It seemed to me as though they were moving around more than the other colonies; the others have very few dead bees. I brought this one colony up on the south porch, covered it with several pieces of carpet, thinking we might have a day when it would be warm enough on the south side of the house so they would take a flight.

I looked in the hive; as far down as I could see between the frames, all was capped honey.

Could you tell me why they should be dying at the rate they are?

The hives are placed on a bench three feet above floor.

## IOWA.

Answer.—It is difficult to give a positive answer to your question, because you do not state some of the most important facts in the case. Did you have a thermometer in the cellar? If so, what was the temperature? It may have been too warm or too cold. It was probably the latter, if the weakest colony is dying out. When did you put them outside? Was it cold or warm?

If you wish a colony to have a flight, you should put it out only when the weather is warm, so they can fly at once. Otherwise they are worse and worse all the time.

It is possible also that their honey is bad honey, honeydew or more or less fruit juice. A number of people have sent us honey, asking what it is, and we find it honeydew. That is bad for winter. I don't know of anything you can do to save that colony. But the best thing is to keep it in a quiet place where the thermometer does not go below 42 and not above 50 degrees. I doubt very much that you will save it.

As to the other colonies, get a thermometer and ascertain what the temperature of your cellar is. If too warm, cool it a little. If too cold, warm it up. Then keep it at the degree at which the bees make the least noise.

## COTTON AS AN ABSORBENT

I have heretofore wintered my bees in individual packing cases with sealed inner covers. Having an occasional mouldy comb in the spring, I changed my plan on about fifty colonies, as follows: The escape hole has been left covered with a piece of bed comforter nearly the size of the inner cover; over this the outer cover, then the packing case.

I am wondering if the cotton comforter will not become saturated with moisture, making the condition worse than if left tightly sealed.

Packing cases are not deep enough to take super of leaves. Hives have metal-covered telescoping covers.

If you think the condition dangerous, I can unpack the top and change to a tight inner cover, although it entails considerable labor.

## LONG ISLAND, N. Y.

I think you will find those colonies better off than the rest. True, the cotton cover may become saturated with moisture, but is it not better than to have this same moisture spread over the combs and make them mouldy? We have often found the

leaves above our colonies soaking wet, after winter; but the bees were all right and dry.

The only fault I can find is that you are using this covering over what I take to be a bee escape. It is too small an opening, to my taste. We prefer the entire top of the combs covered in this way, provided there is not a real current of air. In a word, we want our bees covered as we like to be ourselves in bed on a cold winter night, with a porous covering, but without a draft, or air current.

## HELPER'S WAGES

Kindly let us know in the American Bee Journal the wages the beekeepers pay a man as a helper.

## WISCONSIN.

Answer.—The wages paid to beekeepers are exceedingly varied, because the conditions in which these wages are paid are so greatly varied also.

We can, however, set as a rule that the care of an apiary is worth about half the crop, or if it swarms or divisions are made, about half of the divisions, the working beekeeper paying for his share of the hives. At any rate it was upon the above conditions, or something similar, that we worked, and we have worked upon both sides of the proposition, taking bees on shares as well as letting bees out on shares. We consider the above conditions fair on both sides.

When it comes to paying a cash hire, that is a much more difficult question to settle. The price must depend upon the ability of the employed apiarist, upon the locality in which he lives, whether he can live at home or must travel away from home to care for the bees, upon the number of colonies to handle and also upon the more or less responsibility which he assumes. These matters, I believe, must be decided amicably between employer and employee.

## WORTH OF BEES IN SPRING

This was my first year with bees and I now have 17 good, strong colonies in two-hive bodies (ten frames), heavy packed, wintering outdoors. Had about no surplus honey, for I divided the stores with the weak colonies that I got late in the season.

All but three of my colonies I transferred from trees or houses, or trapped out of a tree or house. Only failed to get one colony, and it was in a house where the shingles were so full of holes I could not shut the bees out. I had a lot of experience, but am looking for more.

I want your advice. A man has 60 colonies he has been running for comb honey, wintering outdoors in ten-frame, single-hive bodies, and no protection, only a timber windbreak. This was a poor year here for honey; he got nothing to speak of, but last year he got around 1500 pounds. His health is poor and he wants to dispose of the bees and about 100 supers (comb honey); also might rent on the share. If these bees are free from disease and most of them live through the winter, what are they worth next spring? What would be a fair way to rent on the share? I would a little sooner rent, as my capital is none too large.

I am running my colonies for extracted honey and would like to do the same with these 60 colonies, if I rent them, for I probably would buy them in a year or two.

## IOWA.

Answer.—The price of colonies of bees depends upon the quality of the bees, whether pure Italians, hybrids or blacks, and upon the hives in which they are, whether the combs are straight in the frames, whether they have much drone comb, whether the hives are old or new, etc. Besides, the price depends also upon the opportunities. I was once asked to take care of the sale of 75 colonies of bees and they told me to sell them at auction. This was near Versailles, Illinois, some 40



years ago. I found that if I sold them at auction I could not obtain more than \$1 to \$3 per colony, and they were all good colonies. So I bought them myself and paid \$3 each for them. I sold them again after making enough out of them to net the entire price they cost me. Colonies ought to sell all the way from \$3 to \$10, if they are good to fair.

As for renting them on shares, it is usual to divide the crop equally, each man paying for his share of the supplies used.

#### BANKING WITH DIRT

1. I am wintering bees with hives on the ground, facing southeast, sides other than southeast (entrance) banked to top with dirt. Kindly inform me if there is danger from moisture underneath. (The ground drains well.)

2. Also, if there is a chance of the snow smothering with snow.

IOWA.

Answers.—1. We have never tried banking hives with dirt on the cold sides. If the dirt is isolated so that it will not take up moisture, it would probably be good. But if it gets wet, it might make the hives damp. By covering it with a roof, it would probably be all right.

2. Loose snow is all right, as the air travels through it. But when the snow melts and gets packed, it really becomes ice, and then may be quite objectionable. In the coldest weather a blanket of snow is all right around the hives.

#### EARLY DRONES

1. I want to hatch a queen early in spring when there are no drones yet for her fertilization. Could I keep drones through the winter for early spring use? If that could be done, please tell me how?

2. Could I make my colonies to hatch drones about the middle of March, and how?

3. If I take a capped worker brood comb into the warm house, I know that bees will hatch of themselves, and then if I put those young bees into a little hive and give them a comb with fresh laid eggs in, would they know that they are queenless, and could they hatch a queen themselves if there are no old bees to give them instructions? I mean do bees need experience in their life, or do they have an innate talent for that?

4. If a queen be taken from a colony for three days, in that time there will be capped queen cells, and then if the old queen is returned, will she be admitted? Could she be admitted if I return her in two days when queen cells are not capped yet?

5. If I put two weak colonies into one hive and put a division board with a wire screening between them, would they become angry when they see another colony through the wire screening, or make acquaintance? If I take out one queen and take out the division board, will they live together as one colony, or not?

CANADA.

Answers.—1. There is no way to keep drones over winter, except in a queenless colony. But as a rule a queenless colony does not winter very well, probably because they do not cluster as well together without a queen. So, in the spring a colony of that kind will not be very populous. It might be possible to keep it up by feeding and giving it hatching brood, but I doubt whether it would be worth while.

2. Yes, a colony might be made to hatch drones very early, but that also is up-hill business and it is difficult to have them preserved so they may fly in sufficient numbers for a queen to be fairly sure to meet one. The way to cause a colony to raise drones is to have drone combs in the center and feed heavily.

3. I don't think bees need any more instructions on taking care of brood or rearing queens when they are queenless than a mother needs instructions to nurse her

baby after it is born. Those are natural or instinctive tendencies. But doing what you propose by taking hatching brood into the house, without bees, is rather risky, as there is a possibility of the brood being chilled. Besides, it requires an amount of pollen, honey and water to rear brood from the eggs.

4. I do not believe you would run much risk if you returned the queen to her bees within three days after having removed her. But what need is there of doing that?

5. The bees of the two colonies would soon become acquainted and would unite peacefully if you did what you say after leaving them separated by the screen a day or two. The only chance of fight would be if one of the colonies was starving. The others might resent their intrusion then, but they might accept them even then.

#### ASSOCIATION VALUES

1. Would like to know if the American Honey Producers' League have a marketing program.

Just what does the League stand for and what is its main idea? Also send me their address.

2. Also would like to have the address of the state association and any information you can give regarding their work.

3. Also send me the address of the state inspector.

I have from 25 to 40 colonies which I run for honey and have been having a great deal of trouble marketing local honey, as beekeepers come in here and sell strained at \$1.00 a gallon and comb at 10 cents a pound.

I also have American foulbrood to fight, and hope another year we can clean up around here.

This year 20 colonies gave me 2,000 pounds of strained and 1,000 comb in spite of foulbrood.

ILLINOIS.

Answers.—1. The American Honey Producers' League is working hard to secure co-operation among beekeepers for marketing their honey, but there is more apathy than activity among men who would be most interested in its success. Send to them for their program and subscribe to help matters along. The address of the secretary is R. G. Richmond, Fort Collins, Colorado.

2. The Illinois State Beekeepers' Association meets annually at Springfield, and its president is Dr. A. C. Baxter of Springfield, Illinois, and its secretary G. H. Cale of Hamilton, Illinois. If you write to the secretary he will give you full information about the work of the association.

3. The state inspector is A. L. Kildow, Putnam, Illinois.

I have tried hard to get some activity among beekeepers. I have held all the offices of the National, one after another. But the average beekeeper, after he pays a dollar for membership, thinks the thing should go without his help, and expects hundreds of dollars of benefit. As he does not get much benefit he gets dissatisfied and quits. Whenever beekeepers will take their interests in hand, there will be some progress. But it is well nigh discouraging to the old heads who have worked so long without any results.

#### EXTRACTING FROM LARGE FRAMES

1. Will you please advise me where the "Journal of Agricultural Research" is published? And its price?

2. Is it possible to extract honey from Jumbo frames?

3. Could one change the spacing of Jumbo frames from 1½ to 1¼ inches after foundation has been drawn out?

INDIANA.

Answers.—1. The "Journal of Agricultural Research" is published by the Secretary of Agriculture, at the Government printing office, at Washington, D. C., but the price

is not marked upon it. We get it by exchange. No doubt that they will send you a sample copy if you write for it and will tell you under what conditions they send it out.

2. Of course you can extract honey from full-size Jumbo frames, which are of the same size as the Modified Dadant brood frames. It takes a larger basket than for the Langstroth sized frames, but they are regularly made for sale, by all manufacturers.

3. All you need to do to change the spacing of Jumbo frames is to put only nine of them in a hive which is built for ten. Since the wider spacing has been recognized as better, most of the makers of the narrow spaced hives advise doing this. I have even heard a dealer say that it was difficult to maintain the narrower spacing because the bees put so much propolis on the Hoffman shoulders of the frames that it sooner or later compels a wider spacing.

#### CULTIVATION IN APIARY

1. I was thinking about plowing my bee lot and planting sunflowers between the hives and have two hives and a row of sunflowers and then about eight feet of space. In this space I would like to plant some vegetables that do not grow very high. Do you think that the ground will get so warm that it will do danger to the hives, such as to cause the combs to melt on a warm day? Do you think if I plowed the land that the ants will bother much?

2. Can you tell me how high a hive should be off the ground?

WISCONSIN.

Answers.—1. If you put shades over your hives, made of boards, or brush or even grass, laid over a framework, and if you raise the hives from their bottom board, in front, in hot weather, you will have nothing to fear from heat.

As for the ants, I believe there is less danger of them in cultivated ground than in the natural grass of the hive lot.

2. The height from the ground for the hives is of no importance whatever, if you do not let the weeds grow. We prefer about eight inches to a foot.

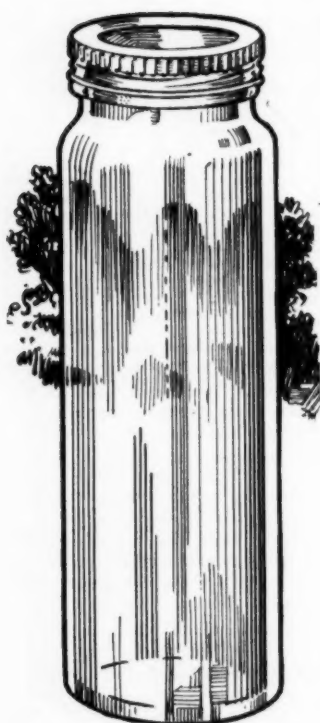
#### Accidents Caused by Bees

The "Gazette Apicole," in the August number, enumerates several accidents caused by bee stings. Two men, on different occasions were stung by bees, with fatal results. One was stung only three times, yet he died within fifteen minutes. On the other hand, a beekeeper hauling bees, ten colonies in a wagon, was stung by thousands of them, when some of the hives were accidentally released while he was unhitching the horses from the vehicle. As many as 47 stings were taken out of one of his ears, yet he recovered from this ordeal.

One cannot help the conclusion that the greater or less danger from bee stings depends upon the condition of health, and probably of nervousness, of the people who suffer from them. Evidently a few persons cannot suffer bee stings without great danger, owing to their tendency to nervous excitement. Others can withstand many bee stings without much suffering.

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## A Simple and Useful "Dummy"

By D. Queen.

Your remarks upon the Division Board and the "Dummy" in the November issue have interested me greatly, especially because your meager description tallies almost exactly with those articles that I have been using for many years.

May I give the scheme more in detail for the benefit of anyone who may desire to try these very useful accessories?

First make a top bar with ends to rest on the hive rabbets, like a frame top bar except that the ends fit closely to the hive wall, and the top of this bar is flush with the top edge of the body.

Then make end bars and a bottom bar (of any convenient thickness), so that when nailed together there will be a one-fourth inch space at each end when in the hive.

Next, nail a cedar shingle on one side of this frame, which produces a shallow box, in fact. Fill this "box" with sawdust, or any available non-conductive material, packing it well and closely. Then nail another cedar shingle over the material, thus making a closed "box" full of insulating material. The thin edge of one shingle is to be placed opposite the thick edge of the other shingle.

Next—and this is no less important—with a hot flatiron give both sides of this "dummy" a thorough saturation of paraffine. Both ends are to be padded with any soft material covered with strong cotton cloth of any kind. Small tacks, spaced about one-half inch apart, are used, being driven on the flat side of the dummy. This padding may be well rubbed with warm paraffine. The dummy should fit quite snugly into the hive body and is, by the way, the same depth as the body.

I make these dummies in one, two or three-frame thicknesses, and use them to completely fill those spaces at any season, including winter. For a division board the construction is the same except that the thickness is an inch or less and there is no packing, but both sides are carefully paraffined just the same.

A colony too weak to go through the winter under ordinary conditions may be carried through by placing a suitable dummy on each side. And, in building up weak colonies these dummies are a surprising help.

In case of foulbrood it is possible to effectively disinfect these dummies—even the padded ends—with a blow torch, as I know by experience. New Jersey.

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## Uniform Grading Rule

The work on comb honey grading rules now under way by the Bee-Culture Laboratory in co-operation with the Bureau of Agricultural Economics, has advanced to the point where tentative rules are ready to be sent out to all those who are interested, for their comment and criticism. It is hoped that producers and dealers in comb honey will send in comments on these tentative rules and that state and other associations at their coming meetings will appoint committees whose duty it will be to consider and report on these rules if the meetings occur too early for receipt of the rules.

These tentative rules will be given as wide a distribution as possible. If anyone who is interested does not receive a copy, the Bee-Culture Laboratory will be glad to send one on application. These copies are not to be retained for use, but are to be returned as soon as possible so that all

suggestions may be considered in preparation of the final rules which will be ready for distribution in good time for the grading of next season's crop.

Jas. I. Hambleton,  
Apiculturist.

## An Appreciation

The cover picture for the January number of American Bee Journal appealed to me so much that I just had to write and tell you about it.

After all, one of the richest gifts that the Great Almighty God can bestow upon mankind is little children, and that picture proves it.

Your picture for the December number was very good, indeed, and came in fine with the season of the year.

Arthur H. Braun.

## A Successful Bee Club

J. W. Powell, of Mesilla Park, New Mexico, has been responsible for the training of the local bee club boys during the past year. Two of these

boys, Roger Elser and William Powell, won gold medals at the annual state club contest at the State College of Agriculture, October 13 to 15. The boys gave a demonstration in queen-rearing at the contest. Next year they propose to try for the trip to the club congress.

## The February Cover

The picture on the February cover is that of another of the editor's little granddaughters. Adelaide is the child of Henry Dadant. Apparently little girls are popular with beekeepers, for we have had some fine compliments on the picture of Dorothy on last month's cover.

## Illinois Inspection Appointments

Notice to Illinois County organizations: All county beekeepers' organizations are requested to hold meetings for the purpose of recommending candidates for County Inspectors for the coming season and forward same to the Chief Inspector, A. L. Kildow, Putnam, Ill.

## Kansas Meeting

The Kansas State Beekeepers' Association will hold their annual meeting on the 9th and 10th of February, at Topeka, Kans.

Geo. Pratt, Secretary.

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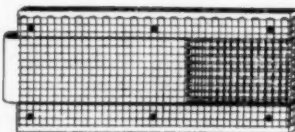
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Send for price list on bees, tested queens and cages.

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We guarantee pure mating of all queens shipped, and safe delivery and satisfaction to our customers. Nothing short of a satisfied customer will satisfy us.

Will begin shipping April 1st. Health certificate with each shipment. Large six-hole cages used with invert sugar candy; 10 per cent books orders. Package bees and nuclei a matter of correspondence.

Price of queens until June 1st, 10 per cent discount after:

Select untested queens, each \$1.00; 6, \$5.40; 12, \$10.00; 100, \$75.00.

Select tested queens, each \$1.50; 6, \$8.00; 12, \$15.00. Breeders, \$5.00 and up.

We are prepared to handle large orders and are ready to make special prices to extensive buyers.

LAKE SHORE APIARIES, Covington, Louisiana

# Crop and Market Report

Compiled by M. G. Dadant.

For our crop and market page for the February number of the American Bee Journal, we asked the following questions of reporters:

1. What part of the crop is disposed of?
2. Any difficulty in disposing of this remainder before the new crop year?
3. How are prices ranging?

## AMOUNT OF CROP DISPOSED OF

We are very certain, from reports coming in, that there is not as large a proportion of the crop disposed of at this time as there was of the 1924 crop on the same date last year. In other words, the crop is not nearly so well disposed of as it was at this date last year.

We can notice by going over our former report cards that there is considerable similarity as to the "draggy" condition of the market that there was at this time last year.

As a general rule, the eastern sections of the country and the entire Southeast, as well as most of the Southwest, is pretty well disposed of its honey, reporting in the neighborhood of 70 to 90 per cent out of the hands of producers.

This is especially so of the New England States and the Southeast country, including the States of Georgia, Florida, Alabama and the Carolinas.

Texas, of course, had a short crop last year. It is disposed of and there have been a number of carloads of inter-mountain honey shipped in to supply the demand.

Ohio and Pennsylvania are fairly well cleaned up on honey, but there are quite a number of large producers in the central western states, including especially Michigan, Wisconsin and Minnesota, who have not yet disposed of their crop and are rather discouraged at the trend of the market and of prices.

As a general rule, the small producer is pretty well sold out on his honey and might be able to use additional amounts if same were readily available.

In fact, we believe that the condition of oversupply of honey on the part of the big producers could be readily alleviated if there were a little more activity on the part of the smaller producer towards disposing of as large a quantity of honey as possible. As stated before on this page, it is not so much the overproduction of honey as it is under-distribution which is causing the difficulty with honey marketing today.

There are a number of carloads of North Dakota and South Dakota honey still available, but it is most especially in the inter-mountain territory that we find the oversupply of honey in large quantities.

Although this is not seriously more than last year, it is appreciably so and has had the tendency to make for a reduction in prices rather than a stiffening as should be the case as the season advances.

It is, in fact, from the inter-mountain territory that we find reports to the effect that they believe there will be difficulty in disposing of the crop unless prices are shaded considerably and quotations coming from some

of the honey brokers on the coast for inter-mountain honey would lead us to believe that the prices have already been shaded in some instances.

## DISPOSITION OF THE CROP

In most instances, as stated above, there seems to be no difficulty in the East and South as to disposition of the 1925 crop before the next honey crop is available.

This is especially true of extracted honey. We have reports, however, of central western producers who are in much difficulty over the sale of their crop of comb honey, owing to an almost entire absence of demand for this product. Undoubtedly, there is an apathetic attitude on the part of the consumer for comb honey, whether this is due to the fact that there was a change made in consumption to extracted during the war or whether the change to extracted on the part of the producers has made an appreciably smaller quantity of comb honey for the market and thus reduced the supply as well as the demand.

However, at any rate, it is entirely true that comb honey producers are in many instances having difficulty in disposing of their crop, especially at remunerative figures.

Some of the inter-mountain producers are questioning whether they will be able to get rid of their stocks before another season at prices which would leave them a profit.

Reports coming from different sources would lead us to believe that there will probably be a slight reduction in carload prices on honey, at least for a short time, until the conditions are alleviated.

## LOCAL PRICES

As to be expected, those vicinities which had large supplies of honey are suffering the most from price cutters. We have reports from many scattered localities of the price cutter's work and of many more in which the low priced man has disposed of his crop and prices are again normal.

One report from a large producer in Minnesota is to the effect that price cutting has, without a doubt, reduced the sales to an appreciable extent instead of quickening them as the price cutter evidently thinks it will.

The "bugaboo" of fluctuating prices of honey is far more evident this year than it has been for several years in the past and undoubtedly this condition will continue at least during the balance of the crop-selling year.

It is to be hoped, however, that all, or practically all, supplies of honey will be exhausted before the new 1926 crop comes on the market.

Personally, it is our opinion that most producers will be fairly well cleaned up on honey before the 1926 crop is offered, but that there will be probably a considerably larger amount in the hands of dealers and distributors than during the past three or four years, at least.

A large crop in 1926 would undoubtedly tend to "glut" the market, unless there is a substantial effort on the part of producers to quicken the demand for honey.

## Tons of Package Bees

Shipment starts April 10; 20 per cent books your order, balance a few days before shipment. No bees or queens sent C. O. D., parcel post or on credit; will not book more orders than I can fill. Shipment made as near date set as weather will permit.

1 to 10 2-lb. packages bees	-----	\$3.25 each;	3-lb. packages bees	-----	\$4.25 each.
10 to 25 2-lb. packages bees	-----	\$3.00 each;	3-lb. packages bees	-----	\$4.00 each.
25 and up, 2-lb. packages bees	-----	\$2.75 each;	3-lb. packages bees	-----	\$3.75 each.

To above prices add price of queen wanted to each package.

Untested queens	-----	1, \$1.25; 6, \$6.50; 12, \$12.00; 50, \$45.00; 100, \$80.00.
Select untested queens	-----	1, \$1.50; 6, \$8.00; 12, \$15.00; 50, \$50.00; 100, \$90.00.
Tested queens	-----	\$2.00 each; select tested, \$3.00 each.

W. O. VICTOR, Uvalde, Texas



## CLASSIFIED DEPARTMENT

Advertisements in this department will be inserted for 5 cents per word, with no discounts. No classified advertisements accepted for less than 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 15th of each month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

As a measure of protection to our readers, we require references of all new advertisers. To save time, please send the name of your bank and other references with your copy.

Advertisements of used beekeeping equipment or of bees on combs must be accompanied by a guarantee that the material is free from disease or be accompanied either by a certificate of inspection from an authorized inspector or agreement made to furnish such certificate at the time of sale.

### BEEES AND QUEENS

**ITALIAN Bees, Queens Bee Supplies.**  
Soharev's Apiary, Slovan City, B. C.

**BEEES AND QUEENS**—I have a limited amount of hybrid bees, not fully Italianized, I am going to offer for spring delivery at the following bargain prices: 2-lb. package, \$3.75; 10 or more, \$3.50 each; 3-lb. package, \$4.25; 10 or more, \$4.00 each. Young untested Italian queen included with each package at the above named prices. This is a real saving to the purchaser, for in a few weeks the colony will Italianize. Ten per cent books your order. Prompt and safe delivery guaranteed. Never had a case of foulbrood in my apiaries. Would urge my old customers to place orders early.

H. E. Graham,  
P. O. Box 666, Cameron, Texas.

**TRY PETERMAN'S QUEENS**—Bred from select breeders, raised in standard frame, strong, nuclei well laid up before caging and last and most important, I select only the largest, thrifty layers to sell, killing all others. From experience I know this pays. Am building a business on a square deal basis. Prices: 1, \$1.25; 6, \$7.00; 12, \$13.00; 25, at \$1.00 each; 100, 90c each.

H. Peterman, Lathrop, Calif.

**GET STUNG**, with Howell's queens in 1926; they get results. Now booking orders; ready April 1st.

D. W. Howell, Shellman, Ga.

**EARLY NUCLEI**, Italian bees with queens. Two frames, well covered with brood and honey and 1 lb. bees with untested queen, \$4.25; ten or more at \$4.00. For every extra frame or pound of bees, add \$1.00. Combless packages: 2-lb. package with queen, \$3.00; 3-lb. package with queen, \$4.00. Delivery will start April 15. 20 per cent down, balance at shipping time.

L. S. Firmont, Moreauville, La.; shipping point, Bordelonville, La. Member Louisiana State Beekeepers' Association.

**PACKAGE BEES**—Pure Italian stock. Write for prices. The Crowville Apiaries,  
J. J. Scott, Prop., Crowville, La.

**NEARLY ALL** young bees in our packages, and at no higher prices. Let me tell you about them.

R. V. Stearns, Brady, Texas.

**LATHAM'S "She-Suits-Me"** untested 3-banded, \$2.00 per queen from May 15 to June 5. After June 5, \$1.00 each. Packages and nuclei. Introduction insured. Send for circular.

Allen Latham, Norwichtown, Conn.

**BRIGHT three-band Italian queens** with special introducing cage. See display ad for prices.

J. F. Diemer,  
Route No. 3, Liberty, Mo.

**OUR breeding queens** have unsurpassed records. Our 1926 circular and price list now ready.

M. C. Berry & Co.,  
Box 697, Montgomery, Ala.

**FOR SALE**—Italian bees and queens, 2-lb. packages of bees with queens, \$3.50 each; 1-lb. package with queens, \$2.50. Queens bred with the greatest of care.

O. P. Hendrix, West Point, Miss.

**GRAY CAUCASIANS**—The "World's Champions in 1925." We announce the purchase of the Champion Queen from Mr. R. A. Morgan, of Vermilion, S. D., whose colony produced 616 one-pound sections of comb honey in 1925.

Mr. Morgan wrote about fifteen years ago that E. F. Phillips would send me six queens a year for me to try out, and it was then that I found out the Gray Caucasians would beat the world, as they would work early and late, in the rain or any way to get there.

Daughters from the Champion Queen are priced for spring delivery, beginning about May, at 1, \$2.00; 6, \$11.00; 12, \$20.00.

Queens from our own stock ready April 10, are: 1, \$1.50; 6, \$8.00; 12, \$15.00.

Caucasians are the gentlest of all bees; let us book your orders early; 10 per cent down is all we ask.

Bolling Bee Company, Bolling, Ala.

**PACKAGE BEES AND QUEENS**—Turn to page 98 and see our ad. Remember the shorter the route, the better for the bees.  
J. D. Benson, Galena, Ill.

**FREE**—A queen free with the first 100 orders of 5 or more queens. Hurry and get your order in. Prices: Untested, 1 to 9, \$1.25; 10 to 24, \$1.15; 25 to 49, \$1.00; 50 to 99, 90c; 100, 85c.

Valley Bee & Honey Co.,  
Box 703, Weslaco, Texas.  
(Formerly E. E. Salge & Bros.)

**PACKAGE BEES**—Circular free.  
Van's Honey Farms, Hebron, Ind.

**125 COLONIES BEES** all in Root 10-frame hives; 3 extra extracting supers per colony. 1 8-frame extractor, honey tanks, etc.  
A. E. Sharron, Plymouth, Mich.

**PACKAGES WITH QUEENS INTRODUCED** will save time and loss in both bees and queens. Our queens are of the best Italian stock and are introduced and ready for business upon arrival. Also queens alone. We never have had any disease in our yards. State inspected. Satisfaction guaranteed.  
A. O. Smith, Mt. Vernon, Ind.

**FOR SALE**—Italian bees and queens; 2-lb. bees with young queen, \$4.00; 3-lb. bees with young queen, \$5.00. Bees inspected, and certificate with each shipment. If interested in queenless packages or large orders, write for special prices and full particulars. Satisfaction and safe delivery guaranteed.

J. L. Leath, Corinth, Miss.

**LIGHT three-banded bees and queens.** Booking orders daily; rush yours for early shipment. Our strains are the best honey producers. Our motto: full weight, best quality and prompt attention to all orders, small or large. 1 2-lb. package, \$3.90; 5 2-lb., \$18.70; 10 2-lb., \$37.50; 25 2-lb. \$90. Add 60c each for three-pound packages; add \$1.25 for four-pound packages. Write for close figures on large orders. State health inspection certificate on each shipment. Cloverland Apiary, Hamburg, Louisiana.

**FREE**—Our 20-page illustrated circular on bees and queens.  
The Stover Apiaries, Tibbee Station, Miss.

**IN my catalog** I tell how I prepare the packages I send and how I cage these bees so that most of the old bees fly back to the hive, leaving young bees in cages, and at no higher prices.

R. V. Stearns, Brady, Texas.

**BOOKING ORDERS FOR 1926**—Two frames well covered, two additional pounds, queen introduced and laying enroute to you, all for \$5.00. Best package and best price in the South. Young Italian queen and bees and Hoffman frames, with health certificate attached. One-fifth down books order for May delivery. Send for December copy of Beekeepers' Item giving co-operative plan of certified advertising of members of Louisiana State Beekeepers' Association.  
Jes Dalton, Bordelonville, La.

**TEN YEARS** of experience in breeding queens of quality Golden, also gray Caucasians. Golden queens: one, \$1.25; dozen, \$11.50. Gray Caucasians, one, \$1.50; dozen, \$15.00. Pure mating. Safe arrival guaranteed in United States and Canada.  
Tillery Bros., Rt. 5, Greenville, Ala.

**GET our circular and price list** before booking your order. Thirty years' breeding the best 3-banded Italians.

M. C. Berry, Box 697,  
Montgomery, Ala.

**TWO frames with brood and honey**, two pounds bees and one untested queen, \$5.00 f. o. b. here.

L. J. Bond, Big Bend, La.

**FOR YEARS** we have been shipping thousands of pounds of bees all over the United States and Canada. Booking orders now for spring shipping. Write for free circulars telling about a customer harvesting 43,000 pounds of honey from 100 colonies of bees this past season. Just think—430 lbs. average. Ault Bee Company,  
Box 98, Weslaco, Texas

**THREE-BAND Italian bees and queens**—Now booking orders for 1926. Satisfied customers everywhere; ask your inspector, extension agent or provincial apiarist, they can tell you what our bees are and what our reputation is. We have a well established business and guarantee satisfaction. In Canada ask your experiment station about us. Write for circular and price list.  
J. M. Cutts & Son,  
R. No. 1, Montgomery, Ala.

**THREE-BANDED Italian queens.** Package bees. Untested queens, 1, \$1.00; 6, \$5.00; 12, \$9.50. 100, \$75.00. Tested queens, \$1.50 each. Write for price list on package bees. Safe arrival, satisfaction guaranteed.  
Taylor Apiaries, Lock Box, Luverne, Ala.

**ITALIAN bees and queens** as good as money can buy. Cypress bee hives; best and cheapest. Prices on request.  
W. E. Buckner, Mt. Vernon, Ga.

**GOLDEN THREE-BANDED and Carniolan queens.** Tested, \$1.00; untested, 75c each. Bees in 1-pound package, \$1.50; 3 pounds, \$2.50; 3 pounds, \$3.25. Safe delivery guaranteed. C. B. Bankston,  
Box 65, Buffalo, Leon Co., Texas.

**COMBLESS PACKAGE BEES** shipped on sugar syrup. Pure Italian stock with queen. Two-pound packages, 1 to 10, \$4.25; 3-lb. package, 1 to 10, \$5.25. Write for prices on larger lots and nuclei. No disease, and safe arrival guaranteed; 20 per cent books orders. Reference furnished.  
John A. Williams, Box 178, Oakdale, La.

**SUPERIOR ITALIAN QUEENS AND BEES** Get our prices on package bees for 1926 delivery. No disease; we guarantee bees and service to please in every detail or your money back.  
W. C. Smith & Co., Calhoun, Ala.

**SALIDA APIARIES** for early Italian queens and package bees. Write for prices and order early.  
Salida Apiaries,  
Salida, Stanislaus Co., Calif.

**JAY SMITH strain Italian queens.** Book early for spring delivery. Satisfaction guaranteed; \$1.00 each.  
J. C. Hester, Mansfield, La.

**BRIGHT ITALIAN QUEENS**—One, \$1.00; 6 for \$5.00 or 12 for \$10.00. Write for prices on large orders or package bees.  
P. B. Skinner, Greenville, Ala.

**LEATHER COLORED ITALIAN QUEENS**—\$2.00; after June 1st, \$1.00. Tested. \$2.00.  
A. W. Yates  
15 Chapman St., Hartford, Conn.

**SALIDA APIARIES** are now booking orders for early spring delivery of our high-class Italian queens and bees. We use the best breeders obtainable and ship only the best thrifty queens. Prompt service, safe arrival in U. S. and Canada, and we guarantee to treat you square. Untested queens: 1, \$1.25; 6, \$7.00; 12, \$13.00; 25, \$1.00 each, and 100 at 90c each.  
Salida Apiaries, T. L. Nicolaysen, Prop.,  
Salida, Stanislaus Co., Calif.

**BRIGHT American Beauty Italian Bees and Queens**—Equal to any strain. See ad. page 91. Tupelo Apiaries  
J. L. Morgan, Apalachicola, Fla.

**FOR SALE**—Italian queens ready May 15. One queen, \$1.00; 6 queens, \$5.50; 12 queens, \$10.00.  
W. W. Talley,  
R. 4, Greenville, Ala.



# It's very simple—

YOUR honey has a better chance in a decorated metal container.

Such packages as these Canco honey pails do a great deal to win permanent friends for your product. They look so well in the store. They are so easy to keep clean and bright. In both store and home they remain active advertisements for you as long as they exist.

Used one season, they make your selling much easier the next. Plan now for the coming season—write to one of these distributors for samples and prices, or direct to the nearest Canco office.



*This Canco honey pail is brilliantly decorated in red, green and gold. Made in 3 sizes—2½ lb. cans, 5 and 10 lb. pails.*

Colorado Honey Producers Association, Denver, Col.  
Dadant & Sons, Hamilton, Ill.  
G. B. Lewis Company, Watertown, Wis.

10 Tivoli Street, Albany, N. Y.  
1304 Main Street, Lynchburg, Va.  
23 W. 3rd Street, Sioux City, Iowa  
318 E. Broad Street, Texarkana, Ark.

B. F. Smith, Jr., Fromberg, Mont.

## American Can Company

NEW YORK CHICAGO SAN FRANCISCO HAMILTON, ONT. PORTLAND, ORE.

# American Can

CONTAINERS OF TIN PLATE • BLACK IRON • GALVANIZED IRON • FIBRE



## Burr Combs

### Repeal the Bounty

By Carroll Swanson.

Right now we are experiencing what might be termed the zero hour. Just getting ready for a season's rush of orders. In the meantime Cale, Pellett and a few others think that I should be the source of amusement for them. They spend a few minutes each day trying to cheer(?) me up, or rather to "rile" me up. Readers, (gentle or otherwise) it's awful the way they "rag" me. They even take advantage of my name over which I had little or no control.

Pellett recently received a letter in which was related a story of a man who ran his automobile into a group of Swedes. When he reported at the police station and asked what he should do, was told, "go to the court house and collect your bounty."

So now, several times a day, I hear (whispered or shouted) something pertaining to "bounty on Swedes." It really isn't so bad as it sounds; the Scandinavians probably didn't mind, as it seems that they had given up hope of ever reaching the peninsula of northern Europe again.

Besides this, I don't lay claim to being a Swede any more than Cale claims to be an English baron, which is not at all. Cale sounds just as English to me as Swanson sounds Swedish. Perhaps if Cale had been born in Belgium, the name endowed him might have been Brussels Sprouts, and if in Germany C—e, or S—k—t, (well, it's all the same vegetable family.)

Just to give you the low down on the whole affair and disclose a personal secret, I first broke the silence in Dallas City, Ill., as you have doubtless read elsewhere. For some reason or other, the plans for a monument to me in the village of my birth, have been delayed. Such a stone would likely read:

Carroll Swanson lies far below, not too far,  
An average man as mankind go;  
How well he liked to dine and sup,  
But Burr Combs sure did do him up.

-----, 1899.

(I'll need an epitaph after the rest of the office force read this page).

I gave my age away that time didn't I? Well, if you don't even know the month, you can't send me presents.

And that "bounty" episode isn't the only thorn in my flesh, either. Did you see what LCD wrote about me in the last Burr? It was almost the last straw. After intimating that he could show me up some-

thing dreadful and was afraid to do it because I might sign his name to some of my letters, he blurts out something about "violet sachet" and "afterglow." Oh, Death, where is thy sting?

While we are talking of the joys of living, there's just one thing that I want to see before my wings get frayed. That is just to view MGD play golf. Wouldn't I have a time? I would get just as close to him as my instinct of self-preservation would allow and then I would offer him advice. That would repay him for slamming me with a tennis ball last summer. The advice I would offer ought to be good since all I know about golf is that they have tees and I'm not English enough to like tea. My knowledge of golf is a great deal like the man who knew every foreign language but Greek and it turned out that all foreign languages were "Greek" to him.

Well, folks, as we make a circuit of the offices you will notice a quiet, unassuming man sitting at a desk in the northwest corner office. This is HCD. You will wonder why there are so many sheets of paper in his office that are covered with figures. These just represent a few hours figuring the angles of the bases and walls of the bee comb cells. When he and Fred Garretson get together you will notice that most of the conversation is in the form of fractions and degrees.

Right over there in the library is a desk used by C. P. Dadant when he comes to the plant. I suppose that we all appear rather new and green to a man who has spent a lifetime in developing this business and at the same time helping others through his books and other writings.

The adage "Nothing succeeds like success" has an equal in this office where "Nothing complexes like that school-girl complexion" which all girls try to save. Most of the saving is done by buying a refill for the compact. Moral: Save your school-girl complexion at the nearest drug store.

At that desk Mrs. King works each day. Mrs. King happens to be my sister, but as this was more of a misfortune than a fault, she shouldn't be criticised for it. Like other women, she wouldn't acknowledge it, but the timebook shows that she has been here longer than any other office girl. She changed her name in time to escape the bounty.

At the next desk sits Miss Ash, and woe to the poor mortal who makes a mistake and is brought to task by this young lady. Miss Ash claims to have the blackest hair of all the office girls. Yes, it's just its natural color. I think she uses Armend's or Coty's (not pronounced cooties).

And right here is where Miss O'Brien swings a wicked keyboard. Yes, just bobbed her hair recently. Almost all of them have bobbed hair now. During the summer Ruth is either sitting behind a typewriter or a steering wheel during her waking hours.

Mrs. Roll and Miss Greenslaugh work here where the dictaphones stand. You have seen their initials at the bottom of our letters to you, LSR or BLG. They have gotten more words out of their typewriters than Webster ever put in the dictionary.

You wondered how we kept our large mailing list so well in hand. Here is the cause of its good order—Miss Stidum. She can give you the latest correspondence from Mr. Smith in Montana and Messrs. Steele and Brodie, Scotland, so quickly that all you can get is a glimpse of copper mines and cowboys from one and kilts and rolled oats from the other.

Now everyone tries to keep on friendly terms with Miss Swigelson, the keeper of the books, since it is she who makes out the pay checks each week. If you can keep a secret I will tell you that no powder, paint, rouge, lip-stick or brilliantine has ever marred this complexion. (If this gets out—goodbye next week's check).

Our telephone and auto-call operator, Mrs. Meyer, can make us all hurry from one end of the building to the other by means of the buzzer and bell. Wish I could make the bosses step up like she can.

The American Bee Journal division of the office is ably taken care of by Miss Valentine Dadant. She is assisted by Miss Nichols and Mrs. Lane, who are really about the long and short of the whole office force. You will find their desks in strategic positions surrounding the others in the main office.

#### Too Late to Classify

P. S.—The office cat ate LCD's candy. We can get another cat. MGD is working on an experiment to obtain honey from his radio by adding more "B" batteries.